DOCUMENT RESUME

ED 074 089 TM 002 452

AUTHOR	Stivers, Patricia E.
TITLE	Paper and Symposia Abstracts. American Educational Research Association Annual Meeting, 1973.
INSTITUTION	American Educational Research Association, Washington, D.C.
PUB DATE	Feb 73
NOTE	183p.; Abstracts of papers presented and symposia held at annual meeting of the American Educational Research Association (New Orleans, La., February 25-March 1, 1973)
EDRS PRICE	MF-$0.65 HC-$6.58
DESCRIPTORS	*Abstracts; *Conference Reports; *Educational Research; Speeches; Symposia; Technical Reports

ABSTRACT

Abstracts of papers and symposia accepted for presentation at the 1973 AERA Annual Meeting comprise this volume. Also included are a divisional program listing, topic index, indices of individual paper titles and symposia session titles, and author index. Abstracts appear in the chronological order of presentation consistent with the listing of sessions in the program. (KM)

FILMED FROM BEST AVAILABLE COPY

ED 074089

Patricia E. Stivers

American Educational Research Association

Paper and Symposia Abstracts

New Orleans, Louisiana

February 25-March 1, 1973

IT 002 152

ED 074089

Paper and Symposia Abstracts AERA Annual Meeting 1973

Division Abstract Editors

A – Thornton A. Liechty

B – Kenneth Henson, Jane Angell

C – Carmen Estes

D – Thomas E. Hutchinson

E – John Horan

F – David Allmendinger

G – Judith Torney

H – Ray Forbes

American Educational Research Association
1126 Sixteenth St., NW, Washington, DC 20036 202/223-9485

© 1973, AERA

FOREWORD

Abstracts of papers and symposia accepted for presentation at the 1973 AERA Annual Meeting comprise this volume. The format of the 1973 Abstracts has been redesigned as a companion document to the Annual Meeting Program. Abstracts appear in the chronological order of presentation consistent with the listing of sessions in the Program; symposia and experimental sessions have been identified throughout; all others are paper session abstracts. All indices refer to chronological session numbers, not to page numbers.

All abstracts submitted in compliance with the July 15, 1972 deadline for proposals are included, and a reasonable effort has been made to incorporate late submissions. Some abstracts have been edited in the interests of clarity or brevity where this seemed necessary and could be done without altering the substance.

Appreciation is here extended to each division editor for the efforts contributed to this volume, and to Sally K. Craig for her assistance in the production of this work.

Patricia E. Stivers
Director of Publications
American Educational Research Association

TABLE OF CONTENTS

Foreword ii

Divisional Program listing iv

Abstracts 1

Topic index 151

Index of Individual Paper Titles 154

Index of Symposia Session Titles 164

Author Index 166

DIVISIONAL PROGRAM LISTING

Division A

13.07 Evironmental Stress and Educational Response

13.08 Cooperative Accountability Project for State and Local Educational Agencies

13.10 Administrator Preparation–State of the Art: University Program Responsiveness to the 1970's

15.04 Administering Federal Educational Programs

15.10 Individually guided instruction: Research and Findings

15.27 Survey Feedback in Educational Organization Development

15.28 The Impact of Evaluation on Federal Decision Making

17.05 Economics of Education: Equilization, Production, and Impact

17.08 Administrative Decision Making

20.07 School Community Interaction

20.10 Research on Political and Social-Psychological Variables Effecting the Administration of Organizational Change

25.16 Assessing Change in Education

26.15 Non-public Schools: Contributions to Theories of Educational Organization

26.20 Violent Teenage Gangs in Urban School

27.15 The University and Its Environment: An Environmental Information Delivery System

27.17 Potpourri

28.16 Assessing the Tasks of Public Education

28.17 Towards a Programmatic Production System for Educational Administration

28.18 The Governance of Higher Education

29.21 Satellite Academies Program

29.23 Big City Educational Governance: The Metropolitan Toronto Two-tiered Experiment

25.19 The Student-Institution Interface

32.01 The Uses of Simulation in Educational Administration

32.02 Contrasts in the Process of Planned Change of the School's Instructional Organization

32.04 Policy Analysis as a Focus for Training Programs In Education Administration

32.06 Developing Effective Educational Organizations: Concepts, Realities, and Strategies for Change

32.11 Decision Making in American Education

34.04 Black Educators in Educational Administration

35.05 Collegiate Placement and Credit Policies: Issues And Experiences

35.07 Organizational Structure & Climate: Effects on Leadership

35.08 Response in State Educational Finance Systems to Serrano vs. Priest: Connecticut, Massachusetts, Minnesota, and Virginia

36.02 Multi-Disciplinary Symposium on the Possible Effects on Year-round Education on Community, School, Family and Child

36.05 A Report on the Study of the Professorship in Educational Administration

37.06 State and Federal Governance of Education

37.07 Teacher Negotiations: Problems and Processes

37.08 The Analysis of Educational Policy: A Progress Report

Division B

14.06 Improving Education Through the Use of Computers: Strategies for National Change

14.10 Innovation: Implementation and Evaluation

17.14 Four Provocative Research Reports from 1972 on Mathematics Education K-12

17.19 Curriculum Decision Making–Theory and Practice

17.20 The Open Curriculum: Recent Research

19.03 Public Belief, Communication, and Curriculum Change

19.04 Large Scale Evaluation Models

19.09 Curriculum Development: Modes and Measures

24.02 Multiple Publics, Priorities, Schools, Universities, Some Advocate and Adversary Positions

25.04 Computer Based Instructional Design

26.05 Strategies for Curricular Planning: Toward Definition in the Curriculum Field

26.07 Achieving Situational Teaching of Theoretic Knowledge: Problems and Prospects

27.06 Conceptual Approaches to Curriculum Design and Evaluation

27.09 Teacher-Pupil Behavior in the Classroom Setting

28.01 Reorganizing for Learning: An Experiment in Multi-Unit Instruction

28.02 Toward a Mankind Curriculum

28.14 Within Course: Evaluation

33.01 Curriculum Evaluation: Perspectives from the Users and Doers of Evaluation

33.03 Curriculum Study: Concepts, Goals and Involvement

34.02 The Social Purposes of Education: Curriculum and Social Needs

34.03 Evaluating Evaluation in Early Childhood Education Programs

34.20 The Elementary School Environment

35.02 Innovative Approaches to Curriculum Research

35.03 Pre-Service Teacher Education Evaluation

35.04 The Curriculum: Morals and Values

36.01 Theories of Higher Education

36.07 Curriculum Decisions: The Conceptual and the Practical

Division C

2.02 Studies in Pupil Control

3.01 New Directions in Teaching Educational Psychology

3.04 Children's Performance in Piagetian Tasks: I

4.01 New Course Development Techniques

4.02 Current Research on Basic Processes in Reading

4.03 Defining Teaching Competency: Emerging Values in the Developmental Period of an Assessment Approach to Competency-Based Teacher Education

4.07 Children's Verbal Learning

4.08 Children's Performance in Piagetian Tasks: II

4.09 Identification of Selected Learner Characteristics and their Implications for Personalization of Instruction

6.01 Assessing Interpersonal Functioning in the Classroom: Towards a Technology of Preferred Teaching Behavior

6.04 Learning in Young Children

6.06 Language Behavior

6.07 Learning from Text

6.08 Reading: I

6.11 Cognitive Style

8.01 Issues in Implementing a Competency-Based Program for Teacher Preparation

8.02 Maximizing Effectiveness of Human Resources in Individualized Instruction

8.07 Teacher-Student Learning and Performance

8.08 Creativity

8.09 Reading: II

8.21 Conceptual Bases for Video Playback in Teacher Education

10.01 Factors Relating to Correspondence and other Non-Traditional Instruction

10.06 Teaching and Student Achievement

10.07 Recall of Prose

10.08 Education of the Gifted

10.09 Reading: III

13.15 Effects of Expectancy

13.19 Teachers and Students

14.09 A Plan for the Comprehensive Evaluation College Teaching

14.11 Problem-Solving

15.16 Clinical Judgment and Problem Solving

15.17 Adaptive Models for Instruction

15.18 Report of the Literature Search Subcommittee, NCRE (National Conference on Research in English), Phase I of a Study of Teacher Effectiveness in the Language Arts

15.19 Teaching Effectiveness

15.24 Teaching Strategies for Handicapped

15.25 Readability and Reading Materials

19.01 Teaching Competency: Can it be Assessed?

19.05 Race and Attitudes

19.06 Mathematics Learning

19.07 Program and Product Development

19.08 Artificial Intelligence

19.19 Academic Games and Programmed Instruction

20.21 Student Characteristics

20.23 Studies of Educable Mentally Retarded

20.24 Associative Learning

20.26 The National Evaluation of Follow Through: A Two Year Report

24.06 Performance-Based Teacher Education: Issues and Strategies

25.01 Research, Development, and Evaluation Reading to a System of Individually Guided Motivation

25.02 Problem Solving Measurement and Training Procedures

25.03 Accountability: Problems and Possibilities

25.07 Humanistic Teacher Education

25.08 Prediction of School Achievement

25.11 Feedback and Reinforcement

26.01 Do Teachers Make a Difference? What does the Research Say?

26.06 Individualization in Instruction

26.08 Evaluation by Observation Techniques

26.09 Student Motives, Attitudes and Achievement

26.10 Computer Applications in Instruction

26.21 New Developments in Mastery Learning and its Measurement

26.22 The Pleistocene Epoch of Experimental Research and Development Training Models

27.02 Trends in Readability Research

27.05 Structural Variables that Account for the Difficulty Level of Word Problem Exercises in Mathematics

27.08 Uses of the Coping Analysis Schedule for Educational Settings (Cases) In Research and Teacher-Training

27.10 Adapting Instruction to Individual Differences

28.04 Psychological Processes in Creative Thinking and Problem Solving

28.05 Computer-Assisted Instruction: I

28.12 Affective Learning

28.13 Project Prime (Programmed Reentry into Mainstream Education)

28.26 Learning in the Young Child

29.11 Student Attitudes and Values

29.12 Children's Comprehension of Text

29.13 Ritalin and the Schools

29.15 Classroom Observation

32.07 Student Teaching

32.10 Protocol Materials in Teacher Education—A Product Dissemination Session

33.05 Mathematics Concept Learning Among Prospective Elementary School Teachers

33.07 The White Researcher in the Black Community: A Dilemma

33.08 Factors in Instructional Effectiveness

33.10 Teaching and the Open Classroom

34.05 Schools Without Failure: Case Studies of our School Systems Which have Experimented with the Glasser Approach

34.09 Working Model of a Competency-based Teacher Education System

34.11 Research-Based Models for Training Teachers of Handicapped Children

34.14 Microteaching I: Studies Relating to Supervisor and Teacher Behavior

34.17 Verbal Learning

35.09 The Pre-School Child

35.16 Employer-Based Career Education

35.18 Microteaching II

35.20 Race and Language I

35.21 Theoretical Issues

35.22 Teaching Mentally Retarded Children

36.08 Interactive Psychological Research and Curriculum Development in Reading

36.13 Adjunct Questions and Learning from Text

36.14 Instructional Media

36.16 Achievement and the Disadvantaged

36.17 Race and Language II

36.20 Test Performance

37.05 Learning Rules and Concepts

37.09 Perspectives on Learning from Discourse

Division D

2.05 Recent Developments in Factor Analytic Methodology: New Insights on the Problems of Small Sample Generalizability, Longitudinal Data, Transformation, and Factor Scores

3.07 Test Development I

3.08 Measurement

3.09 Criterion-Referenced Evaluation Using Time-Series Designs and Item-Examinee Sampling

4.17 Selected Papers I

4.18 The Structure of Concept Attainment Abilities Project: Final Report and Critique

10.17 Models of Bias for Using Tests in Selection

13.09 The Systematic Design of Educational Research Training

14.02 Measurement: Criterion-Referenced Testing

14.13 Selected Research Reports

15.06 The Application of a Model for the Evaluation of Educational Products

15.07 Statistics: Data Analysis

15.09 Studies of Teaching

15.12 Abstract-Concrete Dimension of Culture Fair Concept Formation and Problem Solving Assessment

17.07 Statistics

17.10 Student Ratings of Instruction

17.11 Research Methodology I

17.12 Problems in Evaluation

17.22 Performance Testing

19.20 Repeated Testing: Interpreting the Results

19.21 Evaluation of Innovations

19.24 Test Development II

20.11 Methodological Problems

20.12 Research Studies Involving IQ Testing

20.13 Statistics: Anova

20.14 Prediction and Measurement

25.14 Measurement Methodology I

25.17 Statistics: Multivariate Procedures

26.14 Selected Papers II

26.17 Measurement: Validation of Tests

26.18 Maine Assessment of Educational Progress

27.12 The National Test-Equating Study in Reading

27.16 Measurement Methodology II

29.22 Research Methodology II

29.24 Data Collection Problems and Techniques in Research and Evaluation Studies

Division E

2.06 Career Development Research: Implications and Direction

2.08 Counselor Discriminative Stimuli: Empirical Investigation and Application to Counselor Training

4.10 People, Programs and Organizations: The Effective Ingredients of Human Resource Development

6.13 Student Reactions to Community Colleges and the Attrition Problem

6.16 Research on Occupational Classification

8.13 Alternative Explanations for Individual Differences in Social Behavior of Preschoolers

8.15 Career Development of Women

10.10 The National Logitudinal Study of the High School Class of 1972

10.15 The Ethnic Variable in Counseling: Three Experimental Studies

13.01 Research in Counseling: Future Directions

13.06 Homosexuality: Out of the Educational Closet

14.03 Computer Simulation of Client Behavior

15.03 The Self-Concept and Affective Education

15.08 Career Development and Decision Making Research

15.11 Occupational Types and Occupational Prestige

15.13 Race as a Factor in Level of Understanding Between Counselor and Client

17.06 Sex-role Development and Sexism

19.22 The Pupil Personnel Service Staff and School Innovation

19.25 Career Development in Young Children

20.01 Critical Research needs in Community Mental Health, Rehabilitation Counseling and College Counseling

Division F

3.02 Perspectives on Female Education

3.03 From Emerson to Dewey

5.01 Urban Educational History

7.01 Equality of Educational Opportunity: Ethnic Perspectives

7.02 Learning in Public Places

9.01 Adolescence and Social Reform in Historical Perspective

14.07 Doing History: Some Notes Toward A Pedagogy

14.08 Youth Movements in Comparative Perspective

16.01 Elites and Education in Western Europe

16.02 Film and Contemporary History

Division G

20.06 Education Research, Social Science, and Public Policy

24.01 Social Context of Early Childhood Education

24.03 Social Perceptions of Black Students

25.09 The College and University Context and Student/Faculty Attitudes

25.10 The Political Context of School Policy

26.03 Some Reflections on Educational Research

27.01 Educational Innovation

27.04 Schools, Society and Mastery Learning

27.07 A Two-Level Model of Teacher Socialization: The Concept and Some Evidence

28.07 Educational Sociology: Tool for Action or Tool for Thought?

28.09 American Indians and Educational Programs: Pluralism or Deracination

29.01 Social Evaluation of Educational Experiments

29.10 Community Involvement in School Decision Making: What it Means and How We Do It

33.09 Research Methodology in Native American Educational Settings

33.13 The Social Context of Special Education

34.07 Chicano Self-Concept, Values and Classroom Interaction

34.08 Social Organization of the High School

34.10 The Distaff Factor: Are Educational R & D Efforts Helping or Hindering Women

34.18 Multidisciplinary Training for Educational R & D: State of the Art

35.11 Appalachian Consciousness in the 20th Century

35.12 Culture, Schools and the State of Educational Research

35.15 Politics of Educational Innovation: Towards A Research Agenda

35.17 The Social Context in Teacher Education and Attitudes

36.10 Student/Teacher Interaction in the Classroom

36.11 The Results of Using Four Research Methodologies in the Evaluation of an Experimental Program

36.18 The Family as a Social Context for Education

36.19 Contrasts of the Traditional and the Experimental in Current School Programs

37.01 "Talking to the Man" In the City Junior College: A Micro-Ethnography of Communication Behavior

37.04 The High School Context and Student Attitudes

Division H

2.04 New Models for Redirecting Evaluation Endeavors

3.10 Project Evaluation as an Accountability Component

3.11 Studies Designed to Improve School Achievement

4.12 Strategies of Implementation of Innovations

4.19 Macro-Systems Evaluation Models and Concepts

4.20 State Wide Assessment

6.10 Adaption and Change in Long Term Program Evaluation

6.17 Change Oriented Research in Higher Education

6.18 Technical Developments in Evaluation and Assessment

8.12 The Development and Management of a Pilot Project for a Reading Assessment System

8.16 Assessment of Teacher Education and Research Education Programs

8.17 Local Applications of National Assessment Principles and Findings

8.18 Expanding Evaluation Concepts: Applications and Reflections

8.22 The Development and Implementation of an Experienced Based Model for Training Evaluation Specialists

14.01 The Measurement of Change in Personality Characteristics as Educational Outcomes

14.04 Models and Programs for Evaluation of Individual Instruction

14.14 Instrument Developments for Input and Output Assessment

15.01 Recommendations and Sympathetic Suggestions for Future Product Development Efforts in Teacher Education

15.02 Large City Evaluation Efforts

15.05 Instructional Systems: Evaluative Research

17.01 The National Test-Equating Study in Learning

17.02 Cost Effectiveness Analysis in Education

19.10 Contribution of Evaluation to School System Planning

19.12 Applications of the CSE Evaluation Model to a Variety of Educational Programs

19.14 Behavioral Effectiveness of Children in the Classroom: Concept, Application, and Implications for Regular and Head Start-Follow Through Classrooms

19.18 Evaluation of Affective Factors in Education

ABSTRACTS

2.02 STUDIES IN PUPIL CONTROL (C)

Social Exchange in the Elementary School Classroom: The Problem of Teacher Legitimation of Social Power

RALPH W. LARKIN, Center for Urban Education

A study of teacher leadership styles and classroom climates in 75 elementary school classrooms showed that teacher task and expressive orientations powerfully influenced classroom morale. Teacher authoritarianism had no effect, calling into question interpretations of previous studies of teacher leadership. Teacher power orientation showed strong negative relationships to peer influences and peer group centrality. Combinations of teacher leadership modes based on task, expressive, and power orientations were strong influences on classroom climates. Teachers legitimated their power through satisfaction of task and socio-emotional needs of the students. Non-legitimation of power leads to alienated or rebellious classrooms.

Change in Classroom Behavior from Fall to Winter for High and Low Control Teachers

ROBERT S. SOAR, RUTH M. SOAR, and MARJORIE RAGOSTA, University of Florida

In order to identify constellations of behavior related to teacher control style, and change in these during the year, 17 K-2 teachers selected to vary in control style were observed at the beginning of school, late October, and during the winter. Four observation instruments, a rating device and a classroom description were used. AOV with repeated measures showed less convergent teaching, direction and criticism for low control teachers, and more differentiation, exploration of ideas, and acceptance. Strong teacher control, pupil negative affect, and application of previous learning decreased for both groups while teacher acceptance increased. Two interactions were significant.

Perceived Supervisory Style and Teaching Confidence

CURTIS OSBURN, DANIEL L. MERRITT, Indiana State University, and JOHN W. SANDERS, Westmar College of Iowa

This study used Blumberg's Supervisory Model as the basis of an examination of relationships between perceived supervisory style of cooperating teachers and expressed teaching confidence of preservice teachers. Students classified their supervisors into four groups and were asked to rate their teaching confidence in relation to significant others and class size. The data indicated that supervisory style was related to teaching confidence. Supervisory style was also related to changes in expressed teaching confidence that occurred during the student teaching semester. The impact of each supervisory style is discussed. Suggestions for training cooperating teachers are listed.

A Comparison of Classroom Human Relations Problems: Diagnostic Tendencies of Elementary and Secondary Teachers

ARTHUR BLUMBERG and ROGER H. PERRY, Syracuse University

This study investigates the differences in the way elementary and secondary teachers diagnose their human relations problems with their students. The evidence suggests that secondary school teachers generally diagnose their teacher-pupil human relation problems as more attributable to the character of their interaction with their pupils than do elementary school teachers. Elementary school teachers do not seem to locate the source of their human relations problems in their interaction with students. An inference that can be made from these findings is that secondary school teachers perceive their teacher-pupil relations in an adult-adult orientation, while elementary teachers see their teacher-pupil relations as parent-child focused.

The Relationships among Pupil Control Ideology, Observed Leader Behavior, and Discipline Referrals of Public Secondary School Teachers

JON S. FERGUSON and CECIL G. MISKEL, University of Kansas

The rationale for the study of relationships between teacher-professed control ideology and their leader behavior, as observed by their pupils, was constructed from findings and conceptual assertions of Halpin, Winer, and Willower. Student discipline referral sheets were content-analyzed according to misbehavior categories. Significant ideological differences in leader behavior quartiles were not found. Significant differences, however, were found between ideology quartiles and for Initiating Structure between leader behavior and open, verbal misbehavior. The effective teacher-leader appears to achieve a delicate fusion of command and support. Comparable results to Halpin's study were obtained.

Relationships between Measures of Creativity and Pupil Control Ideology

GERALD HALPIN, University of Montana, and RONALD GOLDENBERG, University of Georgia

In order to investigate the relationships between verbal creative thinking abilities, the creative personality, and pupil control ideologies, the Torrance Tests of Creative Thinking, Verbal Form B, the What Kind of Person Are You? Test, and the Pupil Control Ideology Form were administered to 99 college students who plan to become teachers. The creative thinking measures of verbal fluency, verbal flexibility, and verbal originality and the creative personality measure correlated negatively (significant at the .01 level) with pupil control ideology. The more creative potential teachers were more humanistic in their pupil control orientations.

2.04 NEW MODELS FOR REDIRECTING EVALUATION ENDEAVORS (H, SYMPOSIUM)

MARVIN C. ALKIN, UCLA, Organizer

An increasingly popular point of view in evaluation suggests that evaluation "theories" aren't "theories" in the common usage (scientifically acceptable) sense of the word, but rather modes, guidelines and methodologies. Consequently, a fruitful approach for advancing the field would be through strengthening and further developing its methodological and technological theoretic foundations. And, in particular, because educational evaluation is a young, emerging field, still in its developmental stages, its maturation process can benefit from the experiences, technologies and models currently being advanced and practiced in different disciplines.

The objective of this symposium is to report on several widely varying approaches to evaluation efforts which have their origins in various fields outside education, and which might be applied to strengthen educational evaluation endeavors as well as bring to the forefront several promising approaches presently in use but not widely applied. Representing these alternate approaches to evaluation, a multi-level evaluation model, an accountability model, an adversary model, a sociological model and an ontological model are introduced. A final presentation will draw elements from various methodologies.

"An Ontological Evaluation Model," John B. Peper, School District of Philadelphia. Evaluation models imply or assume theories of organization, behavior, and decision-making. Seldom does an evaluation model specify these assumptions. As a result, program evaluators often choose mechanistic models and their resultant information is either inadequate or inappropriate for most of the client's purposes. The Ontological Evaluation Model proposed in this paper is based on a developmental assumption, namely, that humans in purposeful groups, organizations, reenact a cycle of development very much akin to the ontology of a single individual. An educational program is a special case of human organizational development. Program evaluation from this contextual premise, therefore, takes organizational development as its structural analog. Reference is made in the presentation to applications in which the model has been used and to which its use seems most efficient.

"An Adversary Model for Evaluation," Marilyn Kourilsky. A new model for evaluation, applicable to a variety of decision-making situations, the adversary evaluation model, is discussed. Attention has been given recently to the two alternative forms that the decision maker/advisor relationships should take. One school of thought argues for the single recommendation or "expert advice approach"; the other points to its weakness and, instead, suggests an advocacy-type model. The adversary of evaluation is discussed and the assumptions underlying this model are identified and compared to those assumptions of single-recommendation models. Current endeavors pertaining to advocacy and suggestions for implementing the adversary model are offered.

"The Study of Educational Evaluation in Social Context," C. Wayne Gordon. Educational evaluation, developed largely within the tradition of psychometry, has derived both advantages and disadvantages which inhere in the frames of reference, methodology, tools, and values of the fields of psychology and educational measurement. Some of the disadvantages of the current study of evaluation may be minimized by the application of the framework, methodologies, tools, and values of other social sciences, such as sociology. Some of the limitations which can result from traditional approaches and current needs for the study of evaluation are discussed. The coercive and constraining sources of the gaps, disfunctions, and limitations as they relate to the emerging needs of the study of educational evaluation are described.

"A Multilevel Evaluation Model: Experimental Schools," David Budding. Experimental Schools is a small research project in the U.S. Office of Education, supporting up to five comprehensive projects each year and providing an opportunity for long-term testing, documentation, and evaluation of alternatives to present school practices. Experimental projects are designed and operated by local agencies involving a total school program for 2,000 to 5,000 students in grades K-12. A comprehensive evaluation of each project is required to provide (1) complete documentation of the project including its political, social, and educational history; (2) a detailed study of the project's total impact; and (3) identification of successful curricular and instructional components which are generalizable to other settings.

"An Accounting Model for Evaluation," Joseph Comptois. The U.S. Congress has passed legislation which calls upon the General Accounting Office (GAO) to review and analyze the results of governmental programs and activities carried on under existing law, including the making of cost benefit studies, when ordered by either Congress or GAO, or when requested by the committee of the House of Representatives or Senate. GAO is presently expanding its capability to make assessments of the results of federal programs. The systems analysis group, Division of Financial and General Management Studies, is involved in that effort and this presentation includes a description of its activities. The specific provisions of federal legislations that require the Office of Education to report annually to the Congress on the results and effectiveness of all federal education programs under its jurisdiction are described.

"A New Eclectic Model for the Redirection of Evaluation Efforts." Marvin C. Alkin and Jacqueline B. Kosecoff. The development of an eclectic model based upon major elements and deficiencies noted in the above presentations is described. The emphasis of the discussion is on the following aspects: (1) consideration of the decision context as the symptomatic deficiency underlying the need for the "level" distinctions made by Budding; (2) an understanding of management systems and managerial lines of authority as essential elements in the administrative structuring of evaluations; (3) recognition of the distinction between the stages of program development and the relative importance of formative and summative evaluation for each; and (4) the inherent differences among the requisites for *macro* and *micro project* and *program* evaluations.

2.05 RECENT DEVELOPMENTS IN FACTOR ANALYTIC METHODOLOGY: NEW INSIGHTS ON THE PROBLEMS OF SMALL SAMPLE GENERALIZABILITY, GENERALIZABILITY, LONGITUDINAL DATA, TRANSFORMATION, AND FACTOR SCORES (D, SYMPOSIUM)

A. RALPH HAKSTIAN, University of Alberta, Organizer

Three of the most difficult problems over the many years that factor analytic methodology has been employed have been those concerned with factorial invariance and generalizability, transformation, and estimation of factor scores. More recently, attention has been given to factor analyzing longitudinal data. At present, all four problems require more work, but recent developments have provided procedures that come close to representing adequate solutions.

It is the objective of the present symposium to have these problems delineated, recent thinking on them discussed, and solutions presented. The implications of these solutions for the everyday practice of factor analysis will be stressed, and optimal strategies for use with data will be identified.

It is hoped that the many members of AERA that use factor analysis will benefit from listening to and participating in a discussion of the issues included, and that by being exposed to the procedures discussed, will be more enlightened users of factor analysis.

Recent Developments on the Small Sample Generalizability of Factor Analytic Results. Robert M. Pruzek, State University of New York, Albany. Despite recent advances in factoring methodology, there is still a serious barrier to confident interpretations of derived factors.

The most appealing contributions from psychometricians and statisticians have been based exclusively on large sample assumptions. Most factoring applications use score matrices where the number of cases, n, is relatively small; in fact, p, the number of variables, is sometimes as large as n, or even larger. The properties of two newly developed factoring methods which have been founded on the assumption that n is small, perhaps less than p, are examined. These methods are closely related to principal component analysis and Harris's (1962) version of image analysis, respectively. The methods are studied analytically and are employed for analysis of computer simulated data, with known factor structures. Results are discussed, several issues are considered in the context of general factor analytic applications, and implications for practice are noted.

Recent Developments on the Problem of Factor Analyzing Longitudinal Data. H. Swaminathan, University of Massachusetts. In longitudinal studies where a set of tests are administered to the same examinees on two or more occasions, it is often of interest to isolate constructs that are stable over time or study how these constructs change over time. Several factor analytic models have been proposed recently for such studies. However, these are limited in that the models assume the constancy of either the factor scores (Harris, 1963; Rao, 1965) or the factor pattern (Tucker, 1963) over occasions. The purpose of this paper is to: (1) develop a model for k ($\geq$ 2) occasions, (2) provide a statistically efficient procedure for the estimation of parameters, (3) develop large sample statistical tests for testing hypotheses, and (4) outline a procedure for studying the problem of factorial invariance over occasions.

Recent Developments on the Oblique Transformation Problem. A. Ralph Hakstian, University of Alberta. A crucial issue in the conduct of a factor analysis centers around the transformation of the obtained factors to an optimally meaningful position. If the factors are allowed to become somewhat correlated (oblique) in the process, usually clearer factorial solutions will result than if the condition of orthogonality is imposed. Four current and prominent oblique transformation techniques--*biquartimin, direct oblimin, promax,* and the *Harris-Kaiser* procedure--are compared as to optimality of solution. Two newly developed procedures, which fall into the category designated as Case III by Harris and Kaiser (1964) are presented and included in the comparison. The techniques are compared in light of their ability to yield clear simple structures over many data sets, some computer-simulated and some "real", varying widely in terms of number of variables and factors, factorial complexity, and clarity of the hyperplanes. Results are discussed, and implications for practice are noted.

Recent Developments on the Estimation of Factor Scores. Henry F. Kaiser, University of California, Berkeley. A particularly vexing problem in many factor analytic applications has centered around the estimation of scores on the newly derived constructs (factors). The fact that in common-factor analysis the derived factors are linear combinations of the unknowable common parts has made the estimation of such constructs imprecise, and several formulations have been proposed for this purpose, each differing in the kind of scores produced. With Harris's (1962) paper delineating the relationships between the various factor analytic models, new insights have been possible regarding the estimation of factor scores. Procedures are presented here by which the user may obtain exact factor scores, that is, linear combinations of the original variables, in the context of an overall factor analytic computer program. Various interpretive features of the procedures are discussed, and optimal analysis strategies are identified.

2.06 CAREER DEVELOPMENT RESEARCH: IMPLICATIONS AND DIRECTION (E, EXPERIMENTAL SYMPOSIUM)

GARY PRICE, St. John's University, Chairman

The objectives of the symposium are to summarize the most recent research findings in the area of career development and to indicate future direction for research. Each of the four discussants will present a brief summary of the research that has been done in the area of career development. Following the short individual presentations, the four discussants will talk about the implications, nature, and direction for future research in the area of career development. This will be followed by four small group discussions on career development research led by the discussants.

Concern is being expressed by the major institutions of our society and by individuals who are seeking solutions to the problems related to career development and career decision making. Educational institutions are trying to provide appropriate career information at every grade level. Governmental and private agencies are allocating large amounts of resources to provide solutions and information in the area of career development.

2.08 COUNSELOR DISCRIMINATIVE STIMULI: EMPIRICAL INVESTIGATION AND APPLICATION TO COUNSELOR TRAINING (E, SYMPOSIUM)

SHERILYN NYE and HAROLD HACKNEY, The University of Tennessee and Purdue University, Organizers.

The objectives of the symposium are as follows: (1) to present a counselor training model based upon the learning of specified verbal response classes used by the counselor as discriminative stimuli in the interview; (2) to identify related empirical evidence supporting the efficacy of discriminative stimuli with respect to both counselor and client behavior; (3) to demonstrate a systematic mode of training counselors in verbal stimulus discriminative (sd) response; and (4) to formulate new ideas for research and training in specific verbal response classes and styles, enhanced by questions and reactions from the discussant and the audience.

The first presentation, "Systematic Counselor Training: Use of Discriminative Stimuli in Predicting Counselor Behavior and Client Outcomes," will be given by William Cormier of the University of Tennessee. The concept of counselor verbal response classes used as stimulus discriminators in the interview will be introduced. Based on principles of learning and operant conditioning, the implications of verbal response classes for both counselor and client behavior are to be discussed. A review of prior research related to the topic with specific reference to factor analytic studies of counselor verbal response modes is included. Emphasis is on the primary value of utilizing a specified, systematic model of training counselors in verbal responses classes of stimulus discriminators. The author concludes that training in specified verbal response classes and styles is a method by which certain counselor behaviors can be systematically achieved, demonstrated, and operationally measured. Operationalizing counselor behavior in these terms provides for a research model of adaptable replication in order to generalize the effects of certain kinds of counselor behavior. This type of training enables the counselor to assess his impact on the client. Use of counselor discriminations prevents the inadvertent introduction of counselor bias. Both the counselor and researcher can investigate whether or not the counselor's behavior is contributing to the client's goals as opposed to supporting the counselor's particular theoretical bias.

"The Effects of Counselor Minimal Verbal Stimulus, Restatement, and Probe on Client Verbal Behavior" will be presented by Mary Auerswald of the University of California at Berkeley. The author will introduce evidence from a recently completed research study in which two counselors were systematically trained to emit three specified counselor discriminative responses: restatement, probe, and minimal verbal stimulus. Using a content analysis of forty interviews, the author will discuss the effects of the three discriminative stimuli on the self referent and affect verbal behavior of the clients. She concludes that the three discriminative stimuli differentially effect client verbal behavior.

Fred Barnabei of John Carroll University will discuss "The Effects of Counselor Reflection, Probe, and Confrontation on Client Verbal Behavior." Evidence from a recently completed research study is presented. In the investigation four counselors were systematically trained to emit three counselor stimulus discriminators: reflection of feelings, probe, and confrontation. Utilizing a content analysis of 20 counseling interviews, the author discusses the effects of the three discriminative stimuli on self referent, affect and time orientation of client verbal behavior. The conclusion is that, of the three discriminative stimuli, the probe elicits the most self referent and affective client statements while confrontation elicits the least. Time orientation (verb tense) is not significantly effected by any of the three discriminative stimuli. The author also concludes that there is an inverse proportion between the number of counselor words spoken and the amount of self referent and affective language emitted by the clients.

The presentation by Harold Hackney, Purdue University, in "Use of Counselor Discriminative Stimuli as an Intervention in Effecting Change in Client Outcomes" investigates the assumptions of past research models and suggests areas of potential study related to the effects of counselor discriminative stimuli on client outcomes. The author conceptualizes client change both in terms of within the interview changes (enabling outcomes) and outside the interview outcomes (client controlled change). While enabling outcomes are a direct result of counselor discriminations within the interview setting, counselor discriminative stimuli can also be implemented to assist the client in managing the environmental contingencies outside the interview. These counselor stimuli would influence the client to make self discriminations independent of continuous counselor reinforcement. Related evidence on self control procedures is included as empirical support for this position. The author concludes by identifying other discriminative stimuli and client outcomes yet to be assessed. Means by which multiple sources of data on client controlled changes can be gathered are also investigated.

Sherilyn Nye of the University of Tennessee will present "The Training of Counselors in Discriminative Stimuli: Demonstration of a Systematic Model." Based on behavior modification principles of performance objectives, social modeling, reinforcement schedules and immediate feedback, the author will discuss a quadratic model by which the learning of specific discriminative stimuli can be accomplished. The suggestion is made that counselor discriminations can and should occur with respect to the self first, followed by a dyad, and finally within a group. Following the overview of the training model and its specific uses, the training process for one verbal response class used as a common counselor discriminative stimulus is demonstrated. The author emphasizes the feasibility of this type of training model in terms of translating theoretical notions into actual counseling performance.

Donald Ward of Purdue University will summarize the preceding presentations and present an overview of the past and current research establishing the discriminative model as efficacious for both counseling performance and client outcomes. Pertinent, but yet unanswered issues and questions concerning the effects of discriminative stimuli are identified. Specifically, the author will present a research model by which specific verbal response classes can be incorporated into systematic counseling styles.

The nature of the symposium reflects both scientific and educational value. Its scientific value lies in the presentation of empirical evidence which supports the notion of the theoretical model presented. Furthermore, the symposium presents and demonstrates a training model based on assumptions and systematic, empirical investigation designed to predict the effects of the training on both counselor and client behavior. The educational importance of the symposium is enhanced since the training model under consideration is based on systematic learning principles rather than random processes.

3.01 NEW DIRECTIONS IN TEACHING EDUCATIONAL PSYCHOLOGY (C, SYMPOSIUM)

DONALD J. TREFFINGER, University of Kansas and J. KENT DAVIS, Purdue University, Organizers

The objectives of this symposium are: to provide descriptions of innovative instructional programs in educational psychology, to describe the effects of such programs on student attitudes and learning, to examine the similarities and differences among several innovative instructional approaches, and to consider the opportunities for evaluation and research which are created through innovations in methods and content.

Theodore A. Chandler, Kent State University, will present "Utilization of a Contract Approach in Graduate Educational Psychology Courses." Utilizing both cognitive and affective behavioral objectives, students in a graduate level educational psychology course were permitted a wide range of structured options within the confines of a contract negotiated between each student and the instructor. General criteria for completion required a student to demonstrate involvement, relevance to the student's needs and the course domain, and evidence of problem solving. Specific criteria for each option indicated guidelines for satisfactory completion. A student-instructor-peer group evaluation procedure was outlined in the context of a mandated traditional grading system.

The rationale for developing a contract based upon previous course and instructor evaluations will be discussed in terms of variability of students' skills and interests. In addition, student evaluations of the contract will be discussed as a possible function of student characteristics. Implications for further innovations will be outlined.

Mary T. Littlejohn, Winthrop College, will present "A Mastery Approach for Large Courses." A learning-for-mastery approach, recommended by Bloom and based on key points suggested by Biehler, was used in large lecture sections of undergraduate educational psychology. Quizzes were composed of completion items; one or more alternate forms could be taken until mastery was achieved or grades raised. Students also did short papers on readings or projects chosen by them, in order to add a less convergent dimension of learning and as an additional way of raising grades. Minimum mastery level was a C average on each quiz and two papers. Student evaluation of the approach has been enthusiastically positive.

Melvin L. Silberman and Jerome S. Allender, Temple University, will present "Facilitating Student-Directed Inquiry in an Introductory Course in Educational Psychology." The purpose of this presentation is to discuss an innovative approach to an introductory educational psychology course developed at the Center for Student-Directed Learning at Temple University. The course is designed to enable students to formulate problems of study concerning the teaching-learning process, and to seek resolutions to these problems through a planned search of relevant information. The materials used by students allow for an open-ended inquiry into three content areas: the learning environment, cognitive functioning, and the teaching process. The facilities of a learning center especially created for this course are used to create an open environment for students. Instructors utilize three teaching styles to facilitate student-directed inquiry: teacher-guided, group-planned, and individually-oriented. Research concerning the differential effects of these styles on student involvement and inquiry will be discussed.

Donald J. Treffinger, University of Kansas, will present "On Self-Directed Learning: When You Say Hello, Do They Write It in Their Notebooks?" Learner Controlled Instruction (LCI) represents an approach in which the learner has considerable freedom, within a broadly-defined domain, and in which he is expected to assume responsibility for many decisions about the method and content of instruction. The learner controls decisions concerning selection of course objectives, planning and implementation of course procedures,

and evaluation. The instructor serves as a "facilitator" rather than a "knowledge dispenser." Implementation of LCI in graduate and undergraduate educational psychology courses will be discussed. Specific problems of "traditional" approaches, which LCI purports to overcome, will be considered. Finally, several problems which have been encountered in the utilization of LCI will be described, and possible solutions considered.

In the last decade, there have been many advances in our knowledge of the instructional process, which have been accompanied by similar advances in educational technology and instructional product development. Many educational psychologists, as well as college faculty in other areas, have been increasingly concerned with the improvement of their own instructional efforts with graduate and undergraduate students. For the most part, however, such efforts are reflections of the energy and imagination of individuals or small groups within an institution. As a consequence, some have found the life of the innovator a lonely one, lacking encouragement and useful criticism; others, curious but lacking in confidence or specific skills, may have been unable to initiate change. There is, therefore, a need for communication among teachers and researchers who are interested in instructional innovation and its effects. Symposia such as this may provide increased opportunities for exchanges of information about new ideas and programs, as well as criticism and stimulation which will facilitate development, implementation, research, and evaluation. Consideration of the development, implementation, and evaluation of innovations in methods and content may also provide valuable models for educators and researchers in other fields.

3.02 PERSPECTIVES ON FEMALE EDUCATION (F, SYMPOSIUM)

JILL CONWAY, University of Toronto, Chairwoman

This symposium explores the historical events concerning women's access to education. The time span ranges between the 17th and the 20th centuries. Of particular concern here is the female in professional work, assumptions about female temperament and behavior, the relative place of the non literate woman, the social factors conditioning female scholarship, attitudes of educational reformers in training the female mind and the reasons for female acceptance of male defined educational goals. Related considerations will be made about the demographic and behavioral contours of women's lives.

3.03 FROM EMERSON TO DEWEY (F)

JOSEPH FEATHERSTONE, Contributing Editor, *The New Republic*

The similarities between Emerson and Dewey stage the context for their emerging differences. The focus of the analysis will rest on Dewey, especially his 1903 centennial address in Chicago. Mr. Featherstone will offer his theory of Dewey's significance based on this important statement. One of the important tenets of this theory lies in the connection between Dewey's "practical," but essentially ahistorical, views of education in history.

3.04 CHILDREN'S PERFORMANCE IN PIAGETIAN TASKS: I (C)

Relationships Among Piagetian, Achievement, and Intelligence Assessments

RHETA DEVRIES, University of Illinois at Chicago Circle

The meaning of school achievement and psychometrically defined intelligence was explored in relation to intelligence and achievement as defined by Piaget's developmental theory. One hundred forty-three young bright, average, and retarded children were administered 15 Piaget-type tasks, and school records provided CTMM and MAT scores. Factor analyses revealed orthogonal factors for conservation, CTMM and verbal qualitative tasks, identity, and MAT subtests. Mental age loaded high on the second factor, and I.Q. loaded low on the last. Results suggest traditional assessments of intelligence and achievement should be supplemented with broader Piagetian measures.

Scalability of Tasks: A Methodological Study of Conservation on a Set of Equal Addition Tasks

MARY TREPANIER, RICHARD J. HOFMANN, Miami University, Oxford, Ohio

The general objective of this study was to study Piaget's notion of the sequential development of number conservation in 85 children averaging 5.9 years of age. The question addressed was to determine if a set of ten equal addition conservation of number tasks were scalable. A large coefficient of reproducibility, .912, was computed. Other indices computed suggest that the obtained coefficient was not artifactual. This study appears to validate Piaget's contention that cognitive development is sequential, suggesting that conservation of number on equal addition tasks may be a single attribute of a whole scalable universe of conservation.

The Relationship of Logical Abilities in Children to Concept-Learning: Concept-Shift Performance in Terms of Piaget's Logical Operations

WILLIAM J. HOLDEN, University of Texas at Austin

An attempt is made to integrate two areas that have each made contributions to an understanding of cognitive development: research based on Piaget's theory and investigations employing concept-shift problems as a methodology for the study of the development of mediational processes. Hypotheses concerning the relationship between stages of development in understanding of logical relations of order and multiplicative classification and performance on intradimensional and extradimensional shifts are presented. The result of a study involving 217 Ss from 3-12 years of age supporting the relationship between assessed stage of development and concept-shift performance is reported. The implication of these findings for an account of conceptual development that deals with learning in relationship to the development of logical abilities is discussed.

The Development of Concepts of Nationality and Spatial Relationships of Elementary School Age Children

DAVID C. RAND, JOHN O. TOWLER, Purdue University

The purpose of this study was a replication and extension of Piaget's research concerning the development of children's ideas of country and nationality. An instrument composed of several subtests designed to measure different geographical concepts was administered to 392 subjects ranging in age from six to 12, and selected from 27 different elementary schools in 16 different communities. Results indicate that children do follow the Piagetian stages, but significant differences were observed between expected and observed distributions of the various concepts. Detailed results and examples are presented along with implications for educational researchers and practitioners.

The Acquisition of Conservation through the Observation of Conserving Models

HAROLD COOK, Teachers College, Columbia University, FRANK B. MURRAY, University of Delaware

Nonconserving first-grade children acquired the ability to give conservation judgments and reasons on six conservation problems to

which they had the opportunity to observe conserving children respond. The ability transferred to 12 different problems on the same and different concepts and was retained and present after two weeks. The performance of conservers who observed nonconservers' performance was unaffected. A comparison between modeling techniques for conservation induction and other training strategies is made.

3.07 TEST DEVELOPMENT I (D)

Development of a Signalling Evaluator of Drug Abuser Rehabilitation Success

VICTOR G. HADDOX, University of Southern California; MILTON D. JACOBSON, and RAMSAY W. SELDEN, University of Virginia

In two drug abuse rehabilitation programs, subjects were administered personality evaluation instruments and mood evaluation scales. The results indicated that the subjects with variable mood profiles were likely to drop out of the programs. The most effective items from the scales were compiled, in sentence-completion form, into an instrument designed to monitor conveniently and effectively the likelihood of treatment success of rehabilitation subjects. This instrument can be used to render more efficient the rehabilitation of adolescent drug abusers and consequently minimize the interruptions of their academic careers.

The Measurement of Classroom Environmental Press

WILLIAM J. WALKER, Alfred University; GEORGE G. STERN, Syracuse University

A preliminary analysis of a new instrument, the Classroom Environment Index (CEI), designed to measure the psychological environment (press) of the classroom, was conducted. The structure was essentially the same as other Syracuse Indexes, containing 30 scales of ten items each. Three forms of the instrument were developed. The third revision exhibited adequate reliability and homogeneity, and differentiated between classrooms, subjects, grades, and educational levels. Six first-order and two second-order factors were extracted. Eventually, the CEI will be used to examine relationships between classroom press and student achievement.

Measuring Reflection Impulsivity Accurately

HAROLD I. AYABE, University of Hawaii

Two hundred children, kindergarten through fourth-grade, were tested with the Matching Familiar Figures Test (MFF) and a new instrument, the Multi-Choice Conceptual Tempo Apparatus (MCCTA). The MCCTA was more reliable and had higher negative correlations between errors and latency than did the MFF. The MCCTA did not correlate with both School and College Ability Test and the California Achievement Test on the verbal, numerical and total scores. MCCTA errors correlated positively with MFF errors. High latency scorers on the MCCTA also tended to delay their response on the MFF. The author concludes that the MCCTA appears to be better than the MFF for the measurement of Conceptual Tempo.

Vocational Interests and Manpower Utilization In Micronesia

GERALD M. MEREDITH, University of Hawaii

The impact of modernization has placed new demands on the educational system of Micronesia to meet the manpower needs of a changing society. The purpose of the study was to develop an instrument to measure vocational interests and preferences. The Micronesian Occupational Preference Survey (MOPS) was constructed and administered to 6,269 junior high and high school students in six districts. Results were examined for sex differences, district differences, and factorial structure. Findings are discussed with reference to manpower utilization issues raised by the rapid political, social, and economic changes taking place in Micronesia and the Pacific Basin.

Adapting Word Association for Use as an Evaluation Technique

CONRAD G. KATZENMEYER, R&D Center for Cognitive Learning, University of Wisconsin; GENEVA DILUZIO, Bureau of Educational Research, Kent State University

This paper outlines one approach for adapting the widely used word association technique for use as an evaluation measure. In this approach, project participants are presented with a number of stimulus words reflecting project objectives and are asked to give free associations to these terms. Responses are scored either by the nature of semantic content or by judgment of subjective quality and the resulting scores for pre and post administrations are statistically compared. The technique has been successfully employed in several evaluation studies, and has promise of providing the evaluator with an instrument that has rapidly alterable stimuli.

3.08 MEASUREMENT (D)

A Comparison of Ranking and Rating Methods by Multidimensional Matching

MA. LOURDES S. VILLANUEVA and PETER DUNN-RANKIN, Education Research & Development Center, University of Hawaii

Ranking and rating methods of making direct judgments of pairwise similarity are compared. Three dimensional configurations of seven objects are derived under both judgment methods across two equivalent groups of 59 university students. Using Cliff's orthogonal rotation method of multidimensional matching, comparisons are made between methods (Ranking vs. Rating for Groups 1 and 2) and between groups (Group 1 vs. Group 2 for Ranking and Rating). The comparisons between methods reveal that ranking and rating have highly congruent configurations for both groups of subjects. While the comparisons between groups in both methods are highly congruent, ranking produced greater congruency for the third dimension.

Use of Scaling Techniques in the Analysis of Mode of Responding of Kindergarten Children

DENNIS HUNT and BIKKAR S. RANDHAWA, University of Saskatchewan

This study used Kruskal-Shepard scaling and Procrustes rotation procedures, to investigate the effect of dimensional training on the mode of response of kindergarten children to two-dimensional stimulus materials. Twenty-two kindergarten children were used as Ss. The stimulus material consisted of five cardboard rectangles varying on two dimensions of color and size. From the five stimulus cards ten triads were formed and presented in the same random order to the Ss for similarity judgments. After a period of training the procedure was repeated. The methodology used in this study proved quite satisfactory with young children.

Attitude Scale Evaluation: Ordering-Theoretic Method vs. Scalogram Analysis

GEORGE F. MADAUS, ELINOR M. WOODS and PETER W. AIRASIAN, Boston College

The study compared an ordering-theoretic method with scalogram analysis in the evaluation of an attitude scale. The attitude scale consisted of eight items measuring a progressive and traditional view of education (Kerlinger, 1967). The data were collected in a survey of public school parents (N=178). The scalogram analysis revealed that the items did not form an unidimensional scale. The ordering-theoretic method identified a branched, nonlinear hierarchy and depicted the logical relationships among the items. The results support the use of an ordering-theoretic method over scalogram analysis in the evaluation of attitude scales.

The Assessment of Anxiety about Teaching Using the Teaching Anxiety Scale

JANE S. PARSONS, The University of Texas at Austin

The Teaching Anxiety Scale (TCHAS) is an easily administered, machine scorable, self-report instrument designed to measure situation-specific (teaching) anxiety. The single factor structure, high stability (.95) and internal consistency (.87-.94), and manner used for controlling acquiescent set are discussed. The TCHAS correlates significantly and positively with other measures of anxiety, but .76-.86 of what it measures reliably is unique. TCHAS scores discriminated significantly between groups of preservice teachers rated most and least anxious about teaching. TCHAS scores decreased significantly over two to four months of professional preservice education, though MAS scores obtained concurrently remained unchanged.

An Observational Instrument Based on the Objectives of a Special Educational Curriculum

WILLIAM W. SWAN, Rutland Center

The construction of a category-type observational instrument based on sets of similar behavioral components from mutually-exclusive subsets of measurably stated objectives of a particular special education treatment program is described. Systematic Who-to-Whom Analysis Notation is an in-process instrument employed unobtrusively, utilizing a who-to-whom format and the three-second rule. The observational data are reported to teachers and supervisors in meaningful forms and are used to supplement teachers' impressions and other clinical judgments in the evaluation of progress and in the subsequent modification of the treatment for each child participating in the Center program.

3.09 CRITERION-REFERENCED EVALUATION USING TIME-SERIES DESIGNS AND ITEM-EXAMINEE SAMPLING (D, SYMPOSIUM)

WILLIAM P. GORTH, University of Massachusetts, Amherst, Chairman

The Conceptualization of Objectives for Evaluation. Robert P. O'Reilly, Ph.D., New York State Education Department. Without clearly defined objectives, which contain a statement of the type of behavior which is expected, the conditions under which the behavior is to be demonstrated, and some standard for judging the adequacy of the behavior, it is impossible to design an effective evaluation. However, the conceptualizations of objectives, which have been designed for classroom teachers, do not consider complex issues necessary in evaluation. A more detailed conceptualization of objectives in terms of the stimuli present in the conditions and a description of the responses is presented in this paper with examples from the New York State Bank of Objectives in Reading. Generic objectives, terminal objectives, course objectives, enabling objectives, and strategies for developing objective generation rules are discussed.

A Decision-Theoretic Approach to Criterion Referenced Evaluation. Ronald K. Hambleton, Ph.D., University of Massachusetts. Testing is seen as a decision-theoretic process in which different kinds of decisions are made with norm-referenced versus criterion referenced testing usually representing fixed-quota selection versus quota-free selection. In new individualized instructional curricula, the primary measurement problem is of the quota-free type, and is concerned with correctly locating each examinee's true score above or below a cut-off score which specifies a desired level of proficiency, i.e., mastery. This presentation will frame the decision-theoretical model for individualized curricula. Special consideration will be given to the two kinds of errors which may occur: (1) false positive errors, where the examinee's true score is estimated to be above the cutting score, but is below, and (2) false negative errors, where the examinee's true score is estimated to be below the cutting score, but is above. The practical implications of these errors to the successful operation of a curriculum will be defined and suggestions given for compensating for them.

The Validation of Criterion Referenced Items. Richard Rovinelli, Ph.D., Educational Coordinates. Criterion referenced measurement (CRM) is based upon the definition of specific behavioral outcomes exhibited under controlled conditions defined as a behavioral or performance objective. CRM requires the creation of test items which closely match the objective in terms of the behavior and conditions which they specify. The degree of relationship in the behavior and the condition between the objective and the associated test item is termed their congruence. Traditional item analysis procedures do not estimate the congruence of test items. Several authors, including Dahl, Bormuth, and Hively, have suggested ways of measuring the congruence of objectives and items, but none have presented the details of a practical system for the empirical measurement of this congruence. This paper presents one approach to this problem and combines two criteria into one measure of congruence.

An Empirical Comparison of Criterion Referenced Data Collected by Mastery Testing versus Repeated Item-Examinee Sampling. Peter E. Schriber, Ed.D., Pennsylvania State University. New models of instruction like Individually Prescribed Instruction include the use of a posttest at the end of each set of objectives, i.e., unit, which is often called a mastery test. The posttest contains items measuring objectives which have been taught in the preceding few days. Repeated item-examinee sampling on the same objectives throughout a semester can also be used to collect information valuable to teachers and administrators. The unit posttests provide a large amount of information on a small number of objectives. The item-examinee sampling procedure provides a small amount of uniform information across all objectives at many different times during the semester. Both systems collect information about students on the same objectives using criterion referenced measurement.

Issues in the Implementation of Criterion Referenced Evaluation. Paul D. Pinsky, Ph.D., Stanford University. If criterion referenced evaluation is to be successfully implemented as an integral part of classroom activities, a variety of functions must be performed. These functions include: (1) defining the objectives of the project or curriculum to be evaluated, (2) writing, typing, storing, and retrieving items for criterion referenced measurement, (3) creating the evaluation design, (4) constructing and duplicating the required tests, (5) statistically analyzing the data, (6) reporting the results, and (7) interpreting the results. Training, resources, and management are necessary to perform these functions in a school environment. This paper describes the requirements for an evaluation service that is an integral

part of the school's organization to support criterion referenced evaluation.

3.10 PROJECT EVALUATION AS AN ACCOUNTABILITY (H)

An Evaluative Study of the ROCK English as a Second Language Program in Spanish-English Bilingual Projects

A. R. RAMIREZ, Bilingual Education Project; PAUL G. LIBERTY, JR., Measurement and Evaluation Center

Bilingual education programs for Mexican-American preschool and elementary grade pupils almost invariably include instruction in English as a second language (ESL). While ESL Programs for young Spanish-speaking children usually emphasize pronunciation drill, an alternative approach de-emphasizes phonological drill while concentrating on teaching of word order. Results of several studies from bilingual projects replicate findings that experimental groups perform no better than control groups on pronunciation, vocabulary, and communication but score significantly higher on structure. Formal syntactical drill to learn new word order may be more important than phonological analyses in ESL instruction.

An Evaluation of the Comprehensive Early Childhood Education Network

PEIRCE A. HAMMOND and HARRY P. QUINN, Philadelphia Board of Education

The Comprehensive Early Childhood Education Network is designed to encourage increased community support and influence in schools by providing information about existing early childhood programs to community members and school staffs. Information dissemination, observation of ongoing programs, and project monitoring are planned and supervised by individual District Advisory Councils. Evaluation of district objectives, evaluator's observations, interviews, and monitoring reports show that most information is disseminated, community training in planning and observation is needed, there are parent turnover problems, plans are followed, and increased parental involvement exists.

Assessing Teacher Behaviors with Infants in Day Care

ALICE S. HONIG and J. RONALD LALLY, Syracuse University

Both the rapid expansion of day care services expected in the near future and the special returning relationship, which infants require for optimal development, heighten the importance of evaluation techniques applicable to teachers of infants. The authors have constructed a checklist, "Assessing the Behaviors of Caregivers" (ABC), which is brief, easy to learn, reflects program goals in seven behavioral areas, has high inter-observer reliability, and is responsive to individual teacher differences. Analysis of 70 half-hours of classroom observations of 6-to-15 month-old infants in the Syracuse University Children's Center indicates that the ABC checklist provides a practical, sensitive technique for monitoring day care programs for young babies.

Evaluation of Non-Traditional Instruction in a Southeastern Alaska Indian School

STANLEY L. BIPPUS, JAMES H. McELHINNEY, and RICHARD C. KUNKEL, Ball State University

The instructional program evaluation of a school which serves Hyda and Thlinget Indians is reported. The school, located in southeastern Alaska, has a nontraditional program of mini-courses, supplemented by independent study and specific experiences in vocational areas. The evaluation was conducted at the end of the program's first year. The study is unique in that many of the teachers were community people without training in education. These people were assisted by a professional staff. Data were collected through students, using a social science mode of interviewing. The results of the evaluation were used in planning future mini-courses, independent study, and vocational programs for the community.

Operational Accountability

C. COLANTONI, O. DAVIS, G. LEINHARDT, S. LEINHARDT

The role of performance evaluation and testing in the development of an operational accountability system for urban public schools is discussed. Management science techniques and concepts and econometric methods are used to specify an accountability system, determine its data requirements, and evaluate alternative measures of systems performance. Empirical data, derived from surveys of administrative and teaching personnel in the Pittsburgh public school system and from the system's pupil and financial data files, are used in an examination of structural relationships among resource flows and the domains of administrative and teacher authority. Such analyses are shown to be prerequisite to the implementation of complete accountability systems in public education.

3.11 STUDIES DESIGNED TO IMPROVE SCHOOL ACHIEVEMENT (H)

The Prediction of Achievement Means of Schools from Non-School Factors through Criterion Scaling

THOMAS C. INNES and WM. H. CORMIER, University of Tennessee, Knoxville

The adequacy of using a combination of criterion-scaled non-school variables to predict achievement score means of schools is discussed. Non-school data gathered on eighth-grade students were criterion-scaled, using the total score of the Metropolitan Achievement Test. Eight non-school category scores and actual achievement scores of selected schools were intercorrelated. A stepwise regression analysis yielded a multiple correlation of .949 between predicted and actual scores. Further steps, including a quasi cross-validation study, confirmed the feasibility of the method. Results suggested that the technique could lead to a satisfactory accountability model, could direct educators to focus efforts on non-school variables, and could justify concentration on neglected goals.

The Use of Reinforcement Procedures To Increase Completion of Homework Assignments

DANIEL E. FERRITOR, DAVID R. BUCKHOLDT, and HARRIET DOSS WILLIS, CEMREL, Inc.

Work completed at home may increase a child's performance in school. In this study, reinforcement procedures were used to increase the number of completed homework assignments in preparation for the reading lesson on the following day. The participating children were from a second grade in an inner-city school. A reversal ABAB design was used. The study showed that reinforcement procedures did increase the number of completed homework assignments from about 50% to 80%. Also, reading rate increased and error rate declined. The study showed that reinforcement can be important in increasing the involvement of the home in the school.

backgrounds of persons doing the valuing. Adele Thomas, City University of New York, will discuss the problem of "Determining Priorities among Competencies: Judgments of Classroom Teachers and School Supervisors." The question of which teaching behaviors are most valued by groups of teachers and administrators is dealt with here as well as the problems of investigating and determining priorities among diverse groups. Two methods of determining priorities are contrasted and the suggestion made that perhaps the priorities do not differ so much as do the languages different groups use to operationalize competencies.

"Assessment and Context: The Case for Assessing the Environment as well as Teacher Competency," is the topic chosen by Carol K. Tittle, the City University of New York. While competency in teacher education programs may be assessed primarily at Turner's Criterion Level 3, the ultimate research strategy involves the assessment at Criterion Level 1 (i.e., where the teacher transacts with the environment over some time period and pupil attainment is measured). In the latter case, the Coleman study, and later analyses of it, indicate the importance of improving descriptors of environmental variables (home, community, school) as basic to sorting teacher effects from these other variables. If competency at level 3 is demonstrated in a context, as is the criterion competency assessment at level 1, we can hypothesize that the greater the overlap or consistency in environments the greater the probability of a relationship being demonstrated between the assessments made at the two criterion levels. In order that competency-based teacher education programs begin eventually to relate the likelihood of training to pupil performance, we need to be able to describe the context in which the competency assessments occur. This is essential if we are to identify and describe salient, powerful, situational determinants of behavior.

"Measurement Techniques: What We Have and What We Need," will be discussed by Patricia M. Kay, the City University of New York. The actual measurement of teaching behaviors within competency-based teacher education programs may take a variety of forms, ranging from paper and pencil tests, which might be termed performance tests of knowledge, through simulations, performance demonstrations and classroom observations. The discussion will address the questions of what the strengths and limitations of some available procedures are and what the specifications for future assessment development efforts might be. Differences between techniques devised for evaluative purposes and those intended for research will be explored. Arguments concerning criterion referenced versus norm referenced measurement may become a non-issue in the development of competency based programs.

Ultimately, competency assessments will define what is meant by competent teacher. Given the fact that not all elements of a conception of the competent teacher may be measured and that not all elements of pupil achievement (in a holistic sense) are easily measurable, in what sense will performance assessment be valid? Richard L. Turner of Indiana University will speak on "Evaluating the Validity of Assessed Performances: Methodological Problems." He will discuss the nature of the evidence that may persuade others that teaching competencies that have been assessed are valid for the people being trained, and set forth some criteria which must be met for construct validation.

4.07 CHILDREN'S VERBAL LEARNING (C)

Children's Responses to Well-Formed and Telegraphic Commands

KENNETH F. RUDER, MICHAEL D. SMITH, HAROLD MURAI, Bureau of Child Research, University of Kansas

The purpose of the study was to investigate children's responses to commands which varied systematically in both syntactic structure and content. Subjects consisted of four normal and four mentally retarded children classified as being at the holophrastic stage of language development, and four normals and four retardates classified as being at the telegraphic stage. Results showed no difference in performance between normals and retardates or holophrastic and telegraphic groups. No clear preference by either group to either well-formed or telegraphic commands was revealed.

Interest and Evaluative Meaning as Factors in the Acquisition of a Sight Vocabulary

GLENN C. HOLMAN, JR., University of Wisconsin, Madison

Kindergarten Ss were assigned to three treatments. Group I learned words that were self-selected; Group II learned words selected by children in Group I, and Group III learned words common to the vocabulary of young children. Group I Ss scored significantly higher than the control group Ss, supporting the Ashton-Warner hypothesis. Group I ratings of evaluative meaning were in the direction predicted, but did not reach significance.

Effects of Children's Expectations on Mastery of the Minimum Distance Principle

CHERYL J. GOWIE, State University of New York, Albany

Materials were constructed with the verbs "promise" and "tell" so that sentences were harmonious, neutral, or contrary to the expectations of 20 children in each of three grades (k,1,2). These stimulus materials were administered to an independent experimental sample of 28 children in each of the grades, who heard the sentences and told which agent carried out the action. Type of word association (syntagmatic or paradigmatic, measured on a 21-item test) and sex were blocking variables. Main effects were grade (3), sex (2), type of word association (2), sentence type (2--promise or tell), and level of expectation (3). ANOVA and Scheffe comparisons were applied to the data.

The Effect of Children's Expectations and Word Associations upon the Comprehension of Passive Sentences

JAMES E. POWERS, State University of New York, Albany

This study examines the effect of expectation (children's judgments as to the probable actor within a given sentence) upon comprehension of passive sentences, the relationship of syntactic comprehension to the paradigmatic-syntagmatic shift in word associations, and the effect of sex on each. Forty first-graders and 40 kindergarteners were blocked by sex and word association (by a median-split). Repeated measures for sentences harmonious, neutral, and contrary to expectations were analyzed in factorial design employing grade, sex, word association and expectations. Results of this study bear on effects of semantic features upon children's comprehension of syntax.

Reversing Irreversible Sentences: Semantic Constraints upon Syntactic Comprehension

BARABAR A. KJTSON, SARA C. MOYER, and JAMES E. POWERS, State University of New York, Albany

Probable and improbable sentences (irreversible sentences reversed) were read in active and passive voice to 240 kindergarteners and first-graders, who acted them out with toys. Grade (2), sex (2), voice (2), and probability (2) were variables in a factorial design. Both voice and probability had significant effects upon comprehension. The effect of probability was slight in the active voice, but sizeable in the passive voice. The effect of grade was most noticeable in the improbable passive. Children at this age seem to depend upon semantic support when they decode sentences in a relatively unfamiliar syntactic form.

4.08 CHILDREN'S PERFORMANCE IN PIAGETIAN TASKS: II (C)

A Conceptual Model for the Development of Map Reading Skills

LOIS A. BEILIN, Hunter College, City University of New York

Piaget's theory of spatial concept development served as a model for ordering spatial concepts. Achievement on six Piagetian spatial tasks was correlated with performance on six map reading tasks in kindergarten, 2nd-grade and 5th-grade subjects. Scalogram analyses indicated the scalability of both sets of measures. The findings generally confirm the hypothesized model of relationships between spatial concepts and map skills. While the data confirm the developmental stage sequence of spatial concepts, they also show that published instructional sequences of map skills do not conform to this sequence.

The Effects of Culture and Education on the Acquisition of Formal Operational Thinking

CECILIA D. WOZNY, Keswick Hall College of Education, and
DAVID L. COX, Rutgers University.

Performances on four Piagetian tasks (balance bar, pendulum task, floating bodies, and interpretation of proverbs) were used to assess the effects of culture and education on the acquisition of formal operational thinking for three groups: American educated suburban youths, American educated Puerto Ricans, and Puerto Rican educated Puerto Ricans. Results showed that, in general, the criterion for formal operations was met by ages 12-13, 14-15, and 16-17 for the three groups, respectively. There were no appreciable sex differences. Cultural and educational variables thought to affect the development of Puerto Rican students were discussed.

The Effects of Selected Experiences on the Ability of Kindergarten Children to Use Conservation and the Transitive Property of Six Relations

DOUGLAS T. OWENS, University of British Columbia

Two groups of kindergarten children had activities involving the transitive property of matching relations and length relations, respectively. Both groups had activities involving transitivity of weight relations. A control group had instruction only on relations. Pretests of Matching Relations, Length Relations, Matching Relations Conservation, Length Relations Conservation, Matching Relations Transitivity and Length Relations Transitivity were given. Posttests were given on the latter four. Analysis of covariance on each posttest, using the six pretests as covariables, showed significant difference ($p < .05$) for treatment on Matching Relations Transitivity. Further analysis revealed that both treatment groups outperformed the control group, but did not perform differentially.

An Investigation of the Development of Selected Topological Properties in the Representational Space of Young Children

J. LARRY MARTIN, Missouri Southern State College

A test designed to investigate the nature of the child's conception of space was given to 30 four-year-old, and 30 eight-year-old children. The purpose of the study was to test Piaget's hypothesis that the four-year-old's representational space is predominantly topological while the representational space of the eight-year-old is basically Euclidean. Topological properties investigated in the study were connectedness and openness and closedness of curves. Results favor Piaget's theory as it pertains to the eight-year-old. However, this investigation yielded no evidence to support his assertion for four-year-olds.

Metalinguistic Ability and Cognitive Performance in Children from Five to Seven

MARJORIE H. HOLDEN and WALTER H. MACGINITIE, Teachers College, Columbia University

Theoretical studies suggest that awareness of words as units in speech emerges between ages five and seven, well after the acquisition of grammatical speech. This study attempted to determine if tests of word awareness followed a predicted order of difficulty and if the development of word awareness was related to the acquisition of the Piagetian operation of seriation. Age, item type, and their interaction were all significant. The correlations between word awareness and seriation were generally significant but low.

4.09 IDENTIFICATION OF SELECTED LEARNER CHARACTERISTICS AND THEIR IMPLICATION FOR PERSONALIZATION OF INSTRUCTION (C, EXPERIMENTAL)

LAWRENCE M. KNOLLE, University of Pittsburgh, Chairman

There is a growing body of empirical evidence which supports the concept of adapting (personalizing) learning environments to accommodate individuals' learning characteristics (style). The adaptation of the environment includes all aspects of instruction, i.e., the learning characteristics of the teacher (Harvey, Hunt and Schroeder, 1961[1]), choice of materials (PLAN), rate of learning (IPI), physical location of learning (Parkway School Plan), social climate (open classrooms), new types of grouping (Bradley, 1971; Hunt, 1972). The purpose of this experimental session was to lead participants in experiences that would aid them in understanding the concept of adapting learning environments to complement individuals' learning characteristics.

4.12 STRATEGIES OF IMPLEMENTATION OF INNOVATIONS (H, SYMPOSIUM)

STANLEY SOLES, Fordham University at Lincoln Center, Organizer

The change strategies used and the process of implementation beyond initial installation of three large scale innovative programs will be discussed. Individually Prescribed Instruction (IPI) mainly intervenes to change the instructional system. Robert G. Scanlon, Director of Research for Better Schools, will describe the implementation of IPI. The Multiunit School (MUS-E) with Individually Guided Education (IGE) prefers an intervention of the organizational structure (MUS-E) as a way to change the instructional system (IGE). Herbert J. Klausmeier, Director of Wisconsin Research and Development Center for Cognitive Learning, will describe implementation of MUS-E and IGE. Project Redesign is a statewide approach to educational planning at the local level with heavy emphasis on community involvement as a basic way to insure support for innovations. Bernard F. Haake, Assistant Commissioner for New York, will discuss Project Design's implementation.

Four questions pertaining to the implementation process are posed: (1) What are the basic assumptions of the model (2) What are the main phases of the strategy of change or implementation (3) What are the roles of personnel involved in each phase of the change (4) what changes result in the existing (a) instructional organization, (b) organizational structure, and/or (c) community involvement?

One major strategy toward the goal of individualized instruction is Individually Prescribed Instruction (IPI) along with Computer Assisted instruction (CAI). Research for Better Schools (RBS) has carried out demonstrations and development in schools since 1966, and wide scale field tests in schools since 1967. IPI includes program instruction

The Effect of Training in Structured Tutoring on a Parent's Desire and Capability to Assist His Child in the Acquisition of Reading Skills

JOHN C. WILKINSON, Brigham Young University

The utilization of parents as tutors of their own children provides an avenue for parents to do what they have always desired: assist their children in academic achievement. The study indicates that such a desire exists and that the development of tutoring skills will motivate parents to spent time helping their children. The use of parents in this way could reduce the cost of remediation and the problem of individual help to those who require it.

Implications of the RAII System for Educational Researchers, Developers and Practitioners

GARRETT R. FOSTER and JACOB G. BEARD, Florida State University

Implications of implementing a system for analyzing the utilization of instructional resources are discussed. The system translates established instructional theory into components and procedures of the instructional process, thus providing a vehicle for further development and testings of instructional theory. It also contributes to instructional improvement at the classroom level by providing teachers with detailed, concrete procedures for developing instructional strategies which are consistent with theory. The system can be used to generate alternative instructional strategies and provides the basic data for comparing the cost-effectiveness of the alternative strategies.

Using Group Performance to Interpret Individual Responses to Criterion Referenced Tests

RONALD BESEL, SWRL, Los Alamitos, California

The contention that interpretation of a student's performance on a criterion referenced test should be independent of the performance of his classmates is challenged. The Mastery Learning Test Model, which was developed for analyzing criterion referenced test data, is described. An estimate of the proportion of students in an instructional group which has achieved the referent objective is usable as a prior probability in interpreting individual responses. Considering instructional group performance enhances estimates of individual performance. Correlational data from a set of test items and a representative population of students are used to estimate the required item parameters.

4.01 NEW COURSE DEVELOPMENT TECHNIQUES (C)

A Better Way to Cut the Pie: Instructional Behaviors and Instructional Materials Characteristics

M. DAVID MERRILL, Brigham Young University

A two-way task classification scheme and a taxonomy of task variables which allow the standardizing of behavioral objectives and the relation of instruction to those objectives in a predictable way are described. The two-way task classification separates the content of an instructional task from the student behavior and provides a framework for identifying complex cognitive behaviors in terms of a small number of component behaviors which recur. The taxonomy of task variables enumerates a number of variables which may be used by both researcher and developer to standardize their presentations according to certain qualitative and quantitative instructional display characteristics.

Entering the Post Alchemy Stage of Instructional Design

HARVEY B. BLACK, Brigham Young University

Problems are enumerated which have hampered the use of the "systems" approach to instruction. Among these problems are some basic dissimilarities between the fields to which that approach was originally successfully applied and the behavioral sciences, and the behavioral science conception of "systems approach." In spite of these problems, a systematic information processing approach is defined, which promises to provide the researcher and the instructional designer with effective new tools. The approach describes, in a series of 11 assumptions, a model of the learner as a system composed of four main functions: the analytic, the algorithmic, the heuristic, and the decision function. The 11 assumptions are phrased as assumptions since they are still largely untested, though well supported by past research. For each assumption, implications for the instructional design process are drawn.

Implications of a Micro-Theory of Learning and Teaching

GERALD W. FAUST, Brigham Young University

Theories of instruction are defined as being of two types: the macro-theory which attempts to define optimal instructional sequence for the greatest number of students at once, and the micro-theory which determines for each student his best instructional sequence. The approaches currently being tried in the development of a macro-theory are discussed and the problems inherent in implementing them are noted. An alternate approach, the direct development of a micro-theory, is described as an immediate possibility, and the currently active TICCIT Project attempt to develop the techniques for micro-theory building described.

The Instructional Development Factory

D. STEWART LOW, Brigham Young University

The development teams of specialists used by the TICCIT (Time-Shared Interactive Computer Controlled Information Television) Courseware Project include instructional psychologists, who act as systems designers; authors, who formulate content material; instructional design technicians, who provide objectives and display format specifications; empirical design technicians, who perform validation tryouts, and packaging specialists, who combine content and strategies into "hard copy." Because the "building blocks" of instruction receive the focus, content and instructional strategies can be separated in the beginning, and the material moves through a station-to-station production development procedure. One overwhelming advantage of this process is that more units can be produced per time element than under conventional methods.

4.02 CURRENT RESEARCH ON BASIC PROCESSES IN READING (C, SYMPOSIUM)

GEORGE MARSH, California State College, Dominguez Hills, Organizer

Although reading is one of the most important human skills, only recently have psychologists and linguists begun to investigate the basic processes underlying the acquisition, development, and use of this skill as a tool for learning from prose. In this symposium, four specialists will summarize and evaluate current research in four areas of reading.

Sarah Rundle is working in an educational research and development laboratory, which, in designing an elementary school reading program, found that much information needed to optimize reading instruction was either unavailable or buried in the general psychological

research literature. She and Morton Friedman will evaluate research on how the child develops into a more proficient reader.

Dr. Mosberg will discuss research on reading comprehension with adult speakers of English as a native language, and Dr. Hatch will discuss research on problems of adults reading English as a second language. Dr. Marsh and Dr. Desberg will discuss current research on component skills in beginning reading.

"Current Research in Reading Information Processing" is the title of the paper to be presented by Sarah A. Rundle, Southwest Regional Laboratory, and Morton P. Friedman, University of California at Los Angeles. Cues available for word recognition can be classified as graphic and contextual. Although use of contextual cues is a powerful tool in reading, a survey of studies indicates that ability to use these cues is readily available to young readers. It is suggested, however, that proficiency in the use of graphic information is antecedent to effective use of contextual cues.

Terminal performance in the use of graphic information has two aspects. First, a large instant recognition vocabulary must be acquired. Second, skills which enable rapid identification of unfamiliar words must be available. Comparisons of good and poor readers show the expected differences on these two aspects of word recognition and suggest that the enroute skills are primarily of a linguistic nature.

Various instructional paths have been suggested as the optimum route to proficiency in word recognition. Although a large portion of decisions in the design of instructional components are the result of educated guesswork, research is accumulating which will provide an empirical base for developing more effective instructional programs.

Evelyn Hatch, University of California at Los Angeles, will present a paper entitled "Current Research in Reading a Second Language." Since a student's speed is usually greatly reduced in reading a language other than his own, it has been claimed that his performance shares the characteristics which traditionally distinguish "poor" from "good" readers who are reading their native language. To test this claim, the literature on eye movements, subvocalization, proofreading tasks, word perception, comprehension and speed will be reviewed.

Recent experiments have directly compared the student's performance in reading his first and second languages. To isolate factors which account for poorer performance in the second language, time for word perception, semantic decoding, transitional probabilities, and articulation were investigated. Semantic decoding accounted for two-thirds of the time differential; no significant difference was found for perception time.

Reduced speed in reading a second language is not due to the factors which separate "good" and "poor" readers of English. The evidence overwhelmingly suggests that a very different factor accounts for poorer performance in reading a second language.

"Current Research Trends in Prose Learning" is the subject to be discussed by Ludwig Mosberg, University of Delaware. Over the past decade there has been a renewed interest in research on prose learning. Renewed interest in language and information processing has led to a resurgence of interest in information processing of prose material. There are three distinct trends in research on prose learning. The first concerns the semantic structure of prose, its analysis and its effect on information processing. The second trend is the analysis of the logical structure of prose and the effects of organization of information on the acquisition and retention of information. The third recent research trend has to do with the conditions external to the prose itself which optimize information processing of such material. The research in these major trends is reviewed and evaluated, and the contribution of this research to our present knowledge in this area assessed.

"Current Research in Beginning Reading" will be discussed by George Marsh and Peter Desberg, California State College. Various approaches to teaching reading each have adherents who maximize advantages, minimize disadvantages, and do the opposite for other approaches. The present discussion will concentrate on the cognitive skills involved in what has been called a phonic approach. This approach has the advantages of allowing transfer to novel words, therefore minimizing rote memory load. It has a major disadvantage in that it puts a load on the child's information processing and cognitive abilities.

The research discussed will be concerned with procedures for training pre-readers in the following kinds of skills: (1) learning of invariant grapheme-phoneme correspondences: (a) discrimination of graphemes, (b) discrimination of phonemes, (c) production of phonemes, (d) coding of graphemes onto phonemes; (2) ability to recombine elements in new combination: (a) recombining phonemes (blending), (b) recognizing recombinations of grapheme-phoneme pairs in new words; (3) learning variant grapheme-phoneme (g-p) correspondences: (a) learning concepts of variant g-p correspondences conditioned by intra-word environment, (b) decoding by use of morpho-phonemic rules, (c) decoding polysyllabic words by means of knowledge of lexical identity.

4.03 DEFINING TEACHING COMPETENCY: EMERGING ISSUES IN THE DEVELOPMENTAL PERIOD OF AN ASSESSMENT APPROACH TO COMPETENCY-BASED TEACHER EDUCATION (C, SYMPOSIUM)

PATRICIA M. KAY, The City University of New York, Organizer

Competency-based teacher education seems to hold two closely related promises: the improvement and increased relevancy of teacher training, and the increase in knowledge about which teaching behaviors make a difference in pupil performance. Neither of these promises is likely to be fulfilled unless developing programs are planned in all their aspects to do so.

A key as to whether or not the promises of competency-based teacher education are met lies in the availability of adequate competency assessment procedures. On this basis, the Competency-Based Teacher Education Project at the City University of New York has, as a primary focus, to work toward the collection, construction, and evaluation of assessment procedures. The participating faculty has begun to define those particular knowledges and skills which are thought to be most essential for beginning teachers in order that they may facilitate pupil learning.

This symposium is intended to produce a critical view of the process that is under way and to define some of the major emerging issues which seem to be inherent in the competency-base conception. Within the meaning of competency-based teacher education, a concern of the philosopher is with means and ends: what means will be used to achieve what ends and what are the logical and psychological connections among them. Elvira Tarr of Brooklyn College will address the "Philosophical Issues," including the nature of a society in relation to the idea of competency and the idea of competency itself and where it stands in a hierarchy of values. She will also discuss the epistemological concern: knowing and ways of knowing related to competency-based teacher education.

James Stimson of the City College of New York will speak on the contributions educational sociologists might make to competency-based teacher education, providing they accept the movement in general. There are three areas to which educational sociology might contribute: a body of theory, findings from studies, and methodology. In discussing "The Educational Sociologist's Role in Competency-Based Teacher Education," the case is made that major contributions should come from the methodology of observing people both individually and in groups. Included in the discussion will be a framework for viewing both the levels of analysis (individual, small groups, classroom, school, neighborhood and community), and modes of analysis (from the highly structured classroom observation techniques to less operational and systematic descriptions).

Values attached to specific teaching skills are likely to vary both with the situation in which a skill is to be demonstrated and with the

materials consistent with learning theory. One assumption is that in order to change education you must get learning theory into the way instruction is organized and carried out. IPI emphasizes instructional materials with learning theory, thereby changing the instructional system.

The strategy of implementation includes a series of major stages. In early phases, RBS screens applicant LEA in line with criteria to assure serious commitment of resources and of the staff and administrative time for necessary training to develop any new competencies needed. RBS has extensive experience with wide scale installation of IPI. During 1970-71, IPI was being used in over 340 elementary schools in more than 40 states for such subjects as math, reading, spelling, handwriting, sciences and social studies.

Changes from using IPI chiefly affect the instructional system. It may be used in connection with existing programs of the school. Major changes in school organization and community involvement in decision making are not necessary in this innovation. Teacher acceptance, pupil achievement, and approval by parents sustain the support.

The Individually Guided Education (IGE) and the Multiunit Elementary School (MUS-E) combine a new instructional system and a new organizational structure into one model. Prototypes were developed by WRDCCL and CASEA and field tested in rural schools and small towns. IGE provides a range of choices for the child as to interest, need, method, and individual progress. As an alternative to the self-contained classroom, the differentiated staff roles create new organizational structures. An Instruction and Research Team (I & R) Unit makes many ongoing decisions. Four Units within a school make a MUS-E.

Nationwide installation is underway. Three hundred schools were going multiunit in 1971-72. The four-phased strategy of implementation is awareness, installation, maintenance during the first year, and refinement and institutionalization. Twenty-nine states have some MUS-E. More are added each quarter. In order to change education, the organization of the school must be changed. The MUS-E changes the organization of the schools, provides curriculum planning, produces new roles for lead teachers, and makes possible the implementation of IGE. The effort is directed toward changing the instructional system by also changing the organizational setting. Community involvement varies with the pattern of each LEA and MUS-E.

Project Redesign is basically a long range planning system for local school districts, a network of regional and state offices. It provides for comprehensive systematic change with an emphasis on participation of the total community in the planning process of basic needs-goals-assessment. The community groups examine and redefine education in relation to 24 characteristics, systematically considering alternatives of the entire system.

Four prototype local districts, rural, small town, suburban, and urban, were selected for the initial implementation. One hundred and four additional districts were included in the implementation plan. The role of the State Education Department is to encourage renewal of local districts through guidance, facilitation, and consultation. A regional network of consultation services and staff office is provided. Each Redesign LEA has Steering Committees, Planning Groups, and Tasks Forces to carry out priorities and report back. Since Redesign is a systematic planning tool, uniquely applied in each local district, results vary in line with needs, resources, goals and priorities.

4.14 PREDICTION STUDIES (D and AERA)

Differential Relationships with Grade Criteria for Predictors at Varying Levels of Freshman Grade Complexity

ALAN L. SOCKLOFF, Temple University

Predictor-criterion relationships for cognitive, non-cognitive and cross-product variables were analyzed for criteria constructed for the curriculum units within the following grade complexity levels: Cumulative, divisional, departmental and course. Analyses of the various correlational measures were made in an attempt to inquire into the complexity of the cumulative GPA and its potential for masking relationships at the other levels. The results were somewhat inconsistent, but did appear to suggest the utility of less complex sub-criteria as measures of academic achievement.

Long-Range Prediction of Achievement With Prior Measure of Learning, Social Behavior, Sex and Intelligence

WILLIAM KRYSPIN and JOHN FELDHUSEN, Purdue University; JOHN THURSTON, University of Wisconsin—Eau Claire

The purpose of this research was to determine whether sex, teacher grades, standardized achievement test scores, intelligence test scores, and teacher ratings of children's classroom social behavior are long-range (eight years) predictors of academic achievement. Significant and high Rs were found for all criteria (teacher grades and standardized achievement test scores) ranging from .64 to .86. Sex, teacher grades, and classroom social behavior were significant predictors of academic achievement. Intelligence and standardized achievement test scores contributed little in prediction of teacher grades but they contributed significantly in the prediction of achievement test scores.

Prediction of Minimum Pass Level (MPL) from Field Test Results

JACK I. HOFFMAN and LEROY WM. NATTRESS, JR., Natresources, Inc.

MPL is one means of compensating for varying item difficulty where difficulty is considered on criteria external to an examination. Typically MPL values are assigned by a group of judges and not always consistent. Using field test results to assess MPL values and expected examinee performance are discussed. Means of determining the relation between field test results, committee-assigned MPL values, and examinee responses are considered along with ways of determining homogeneity. Results show committee judgments are not consistent with results obtained from either the field test or examinee responses, and we conclude that additional information should be obtained from the field test group.

The Advantageous Uses of Part-Whole Correlations for the Reduction of Standardized Test Batteries

CAMERON FINCHER, University of Georgia

To reduce the total testing time of an admissions test battery, inter-correlations were run between subtests and total scores on the General Acheivement Tests (GAT) for a sample of 250 males and 250 females. Regression equations based on the correlations were then used to predict the total scores of 500 subjects in a cross-validation sample. The correlations between predicted total scores and obtained total scores for the three tests by sex ranged from +.91 to +.95. The test battery was then shortened by using subtests only. Reasons for the study and the implications of part-whole correlations for such uses are discussed.

4.17 SELECTED PAPERS I (D)

Computerized Analysis of Phonics Skills

MILTON D. JACOBSON, ROGER E. ISON, RAMSAY W. SELDEN and JEROME B. ZUTELL, JR., University of Virginia

The project utilized computer programming to analyze phonic skills. The texts of several basal reading series were used as data in the

development and refinement of a sophisticated program to analyze the internal consistency of the skills presented, and compare the sequence of skill presentation with the actual initial occurrences of examples of the skills in the text. The program rarely requires manual input or human judgment, and can develop a presentation sequence simply by reading the text. This program can implement publishers' and educators' efforts to pinpoint phonics skill sequences in their texts and facilitate text revision and/or rearrangement of the skill sequence.

The Effect of Perceptual Focus and Planar Orientation Sequence on Length Conservation Responses

CHARLES PARISH, Ball State University and
GRAYSON H. WHEATLEY, Purdue University

Effects of perceptual focus and sequences of planar orientation of rods on length conservation responses were studied. Group administered tasks were designed for use in the experiment. Analysis of variance revealed that subjects gave significantly more conserving responses when a three-rod apparatus was used than when a classical stimulus configuration was used. This significance carried through to the operational level of length conservation. The use of three rods appeared to help disengage subject focus from states and shift the focus to more relevant aspects of the perceptual field. Sex of examiner was significant.

Post-Graduate Career Plans of College Seniors

LEONARD L. BAIRD, Educational Testing Service

The post-graduate vocational and educational plans of a large national sample of college seniors were related to their characteristics by means of zero-order and multiple regression. The criteria were level of degree aspiration, planning to work, planning graduate study in arts or humanities, study in social science, study in science, study in law school, and study in medical school. The results suggested the importance of freshman plans; family, peer, and faculty encouragement; self-conceptions; confidence in personal academic capability; and academic performance. This suggests that a logical and useful model of career choice could be developed.

An Experimental Inquiry into the Relationship of Cognitive Complexity and a Teacher Education Core Course

WALDEN B. CRABTREE and ISADORE NEWMAN, The University of Akron

A 3 × 2 quasi-experimental design, along with oblique and orthogonal factor analysis, Kaiser's Factor Matching, and multiple regression analysis, was employed to evaluate the extent of change in students' number of factor structures (cognitive complexity), relationships among scores on dogmatism, philosophic-mindedness, and behavioral and semantic differential scales. This study tested the possibilities of expanding cognitive complexity of students through a course in philosophy of education and clarified the nomological network of the Scale of Philosophic Mindedness.

A Comparison of Selected Variables from the 1965 and 1970 Doctoral Dissertations of the College of Education, University of Maryland

SYLVIA AUTON, University of Maryland

A dissertation model for evaluation of selected characteristics of doctoral students and their research in education is presented. A research instrument composed of 25 variables was developed to gather data from doctoral dissertations in education. Eleven variables were considered external to the research, e.g., age, and 14 were internal, e.g., score model. Dissertations accepted during 1965 and 1970 in the College of Education, University of Maryland, were used. For each variable a contingency table analysis, modes, and frequencies are reported. While most variables indicated stability of mode over time, eight variables were of different modes in the two time periods.

4.18 THE STRUCTURE OF CONCEPT ATTAINMENT ABILITIES PROJECT: FINAL REPORT AND CRITIQUE (D, SYMPOSIUM)

THOMAS A. ROMBERG, Wisconsin Research and Development Center for Cognitive Learning, Chairman
CHESTER W. HARRIS, University of California, Santa Barbara, Organizer.

The symposium presents a final report and a critique of the Wisconsin Research and Development Center for Cognitive Learning's project: "A Structure of Concept Attainment Abilities." It is designed to summarize the purposes, research methods, and findings of the project and to present critiques of the project from three different points of view. An evaluation of the research methodology employed to identify factors of cognitive abilities and measures of concept attainment in four subject matter fields and to relate cognitive abilities to concept attainment will be presented. An appraisal of procedures used to analyze concept attainment in these subject matter areas as a basis for developing achievement measures along with implications of the findings for curriculum design will be made. An analysis of the findings will be made in terms of their relation to learning theory and to hypotheses concerning instructional practices.

The Purpose and the Scope of the Project

MARY R. QUILLING, Wisconsin Research and Development Center for Cognitive Learning

The purpose and the two main strands of the project are as follows: (1) the development and study of measures of concept attainment in mathematics, social studies, science, and language arts at the fourth-fifth grade level, and the development and factor analysis of a battery of cognitive abilities tests; and (2) the study of the interrelationships of the two types of variables (concept attainment measures and cognitive abilities tests).

Methodological Problems Encountered in the Project

CHESTER W. HARRIS, University of California, Santa Barbara

The methodological problems encountered in the project and how they were solved are discussed. Methods included were: item and factor analysis of tests based on a completely crossed design, comparable common factor interpretation strategy, and canonical variate and interbattery factor analysis of two sets of variables.

Relations between Cognitive Abilities and Concept Attainment

MARGARET L. HARRIS, Wisconsin Research and Development Center for Cognitive Learning

The results obtained from the studies in the first strand, including evidence of replicability of findings, are summarized. Main emphasis is on the findings of the project with respect to the study of the relations between the two sets of variables. The number of dimensions and the character of the dimensions which are common to the two types of variables are described.

An Evaluation of the Multivariate Methodology of the Project

HARRY H. HARMAN, Educational Testing Service

Mr. Harman, and the two additional critics listed below, will have available a lengthy monograph reporting the details of the project, and

will base their critique on it, as well as the papers prepared for the symposium.

An Evaluation of Test Development Procedures Used and Implications for Curriculum Design

RALPH W. TYLER, Science Research Associates

What Do the Findings Add to Our Knowledge about Organization of Memory as Conceptual Structures

BENTON J. UNDERWOOD, Northwestern University

The importance of the symposium is that it brings together a summary of research methods employed and problems encountered in an extensive project that was designed to provide a basis for formulating a structure of concept attainment abilities, and a critique of the project from the point of view of a multivariate methodologist (Mr. Harman), an educational measurement and curriculum design expert (Mr. Tyler), and an expert in learning and memory (Mr. Underwood). Their reports, as well as the reports by Mrs. Quilling, Mrs. Harris, and Mr. Harris, should provide an understanding of how cognitive abilities and concept achievement are related and hypotheses for experimental instructional studies based on this model.

4.19 MACRO-SYSTEMS EVALUATION MODELS AND CONCEPTS (H)

A Self Renewal Model for Educational Systems

PAUL GEISERT, University of Wyoming

The Self Renewal Model presents a plan of action relating to the development of programs within elementary, secondary, and university level educational systems. Based on a framework of evaluation and organizational theory, the model details the steps which should be taken by an educational system to maximize the probability of success while undergoing systematic change. The model will serve educators who are interested in controlled change and educational accountability.

Hypothetical Concepts, Intervening Variables, and Observed Data in Program Development and Evaluation

GARY D. BORICH, The University of Texas

While the logic of science serves as the methodological framework for psychological research, its particular merit for educational evaluation has yet to filter into practical application. The logic of science provides a strategy for evaluating large and complex educational treatments that is a useful guide to program development and improvement. This paper explicates a method of scientific inquiry applicable to the formative evaluation of educational programs and, in so doing, illuminates an artificial distinction between the ways in which concepts are validated in science and education.

The Development and Implementation of a Statewide Evaluation System

JOHN A. KLIT, Illinois Division of Vocational and Technical Education, and TIM L. WENTLING, University of Illinois

A system to evaluate the occupational programs of LEA's within the state of Illinois has been fully developed and implemented. The Three Phase System consists of a local evaluation and planning phase, a phase during which the SEA monitors LEA planning documents, and an on-site visitation phase. Phase Three is applied to approximately 100 LEA's each year, with educators, students, and business and industrial representatives comprising the on-site teams. The system has succeeded in improving programs at both the state and local levels.

The TIES Project—Building A Research Data Base

JAMES LINDSAY, Minnesota School Districts Data Processing Joint Board, and GERALD R. MARTIN, University of Minnesota

In 1967, 20 districts formed the Minnesota School Districts Data Processing Joint Board and established the TIES Project. Total Information for Educational Systems was the goal. The first services were provided during the 1969-70 school year. TIES now serves the information processing needs in administration, instruction, and research for 29 districts with more than 300 schools enrolling approximately 230,000 students. The information needs for the day-to-day operation are also being met through TIES. The information requirements for long-range planning, evaluation, and program development are being investigated and the research data base elements identified and collected.

A Formative-Summative Evaluation Design for a State-Sponsored Program of Educational Experimentation

TANYA M. KNIEFEL, North Carolina State Department of Public Instruction

North Carolina has sponsored a program for educational experimentation at the local level. Nineteen varied projects were funded for a two year period to develop innovative solutions to educational problems. The evaluation, conducted by the state agency's Division of Research, identified two audiences in need of evaluation results: the state agency and the local decision makers. Two designs, one for the total program and one for the local projects utilizing the concepts of formative and summative evaluation, were developed. The development of the design, its implementation and implications are reviewed.

4.20 STATE WIDE ASSESSMENT (H)

The Approach to the Design of the North Carolina Statewide Assessment of Educational Progress

JOHN N. PYECHA, Research Triangle Institute

The strategies and problems involved in designing the North Carolina Assessment Program are described. After being given the mission statement and continuing objectives of the North Carolina State Department of Public Instruction (NCDPI), the basic decisionmaking needs of state level educational planners were identified by the NCDPI/Research Triangle Institute (RTI) design study team. Several alternative assessment plans were developed, costed, and evaluated. This interative design process led to the development of a statewide educational assessment program for evaluating the effectiveness of North Carolina's public elementary and secondary education programs, including a special emphasis on Title I programs.

The Promotion, Dissemination, and Utilization Plan for the North Carolina Statewide Assessment of Educational Progress

WILLIAM J. BROWN, JR. North Carolina State Department of Public Instruction

Carefully conceived operational and analysis plans for state assessment may not be accepted or may have little impact, either at the state or local levels, unless the purposes of assessment are clear and diffusion and utilization of information is well planned. Equally important is the provision of technical assistance in interpreting the curriculum implications of the assessment. This paper addresses the pre- and post-assessment field work which was provided for local school administrators, teacher groups, supervisors, and state agency personnel. In addition, it outlines the most effective means for reporting information to educators, the lay public, and the legislature.

Sampling and Analysis for the North Carolina Statewide Assessment of Educational Progress

GEORGE H. DUNTEMAN and DAVID L. BAYLESS, Research Triangle Institute

The probability sample was a two-stage stratified sample. The first-stage units were schools and the second-stage units were students. Because certain subpopulations were oversampled, the data had to be weighted for analysis purposes. The analyses concerned contrasting North Carolina and its various subpopulations with the nation on standardized aptitude and achievement tests. Contrasts between various subpopulations defined by geographical region, type of community, and socioeconomic status within North Carolina, were also made on cognitive and non-cognitive output measures. In addition, the relationship of various school process variables to achievement measures was investigated.

The Instrumentation and Data Collection Plan for the North Carolina Statewide Assessment of Educational Progress

ROBERT C. EVANS, JR. and HENRY A. HELMS, North Carolina State Department of Public Instruction

Instrumentation included a standardized test of reading, mathematics, language arts, and career awareness; an ability measure; and three developmental instruments measuring background, school, and affective variables. The developmental instruments measured beyond intervening variables like SES and school attitude. A jury, representative of parents and educators, selected the variables to be measured and concurred in the items. Testing personnel who were not classroom teachers collected the data. Training was provided to insure standardization of test administration and data transcription. Prior to analysis, each data record received four comprehensive edits.

4.21 THE TESTING OF BLACK STUDENTS (See p. 150)

5.01 URBAN EDUCATIONAL HISTORY (F, SYMPOSIUM)

MARVIN LAZERSON, University of British Columbia, Chairman

This symposium addresses itself particularly to the central themes of current historic research in urban education. The discussion will begin an analysis of what political and social consequences, if any, this research can hope to affect.

5.12 ABSTRACT-CONCRETE DIMENSION OF CULTURE FAIR CONCEPT FORMATION AND PROBLEM SOLVING ASSESSMENT (D, SYMPOSIUM)

G. A. HALE, Educational Testing Service, Chairman

The theory and rationale for the development of a series of assessment instruments for investigating problem solving and concept formation with elementary school children are presented. The tests vary in representational mode along the concrete-abstract dimension. The theoretical position for the development is based on the work of Guilford, Piaget, and Bruner as well as on a large collection of empirical studies. These tests resulted from an attempt to build culture fair tests of problem solving and concept formation utilizing cine-psychometric techniques. A degree of culture fairness was accomplished by reducing the memory load and verbal mediation through the presentation of concrete relational situations.

Abstract versus Concrete Conceptual Processes. Ernest D. McDaniel, Purdue University. Cohen (1968) has suggested that many disadvantaged children think in relational terms as contrasted to analytic modes of thinking. Relational thinkers tend to respond to situations in a more global fashion than do analytic thinkers, are more field dependent, have a lower level of generality and use language in a more concrete fashion than do children who are analytic in conceptual organization. Attempts to build culturally fair tests by making them content free actually present the relational thinker with a more difficult task. Some of the literature on perceptual processes supports the idea that perceptual closure rather than verbal mediation may be an important element in problem solving. These considerations suggest that tests of cognitive processes may be free of social-cultural bias in that they permit the free use of perceptual processes in concrete problem solving situations.

Concept Formation Assessment and the Concrete-Abstract Dimension. Grayson H. Wheatley, Purdue University. A view of concept formation which synthesizes the views of Piaget with the classical theory of concept formation is presented. A unique set of three tests for elementary school children is described. These tests vary along the concrete-abstract dimension. The hypothesis was that young disadvantaged children would score higher on the concrete form. The tests used included film and paper and pencil tests. The film test presented transformations and attributed situations via super 8 mm movie film with subjects responding in an answer booklet. The tests were designed to be culture fair and results indicate that disadvantaged children perform nearly as well as do nondisadvantaged. The potential use of such tests in measuring cognitive change brought about by intervention programs is discussed.

Problem Solving Assessment and the Concrete-Abstract Dimension. John Feldhusen, Purdue University. The theoretical rationale and the resulting guidelines for the development of several new forms of problem solving tests are discussed. These forms represent four levels of abstractness-concreteness. It was assumed that disadvantaged children would perform best on concrete forms while advantaged children would perform best on more abstract forms. The paper describes the four levels of test material developed, the developmental and field work which has been done with them, and results from several research studies in which they were used. These empirical results are interpreted in the light of theory and the results of other studies.

6.01 ASSESSING INTERPERSONAL FUNCTIONING IN THE CLASSROOM: TOWARDS A TECHNOLOGY OF PREFERRED TEACHING BEHAVIOR (C, SYMPOSIUM)

DAVID N. ASPY, Northeast Louisiana University, Organizer

The purpose of this symposium is to contrast and synthesize three different approaches to research on the interpersonal functioning of the classroom teacher: (1) the teacher's causal orientation, (2) the teacher's general levels of interpersonal functioning, and (3) the teacher's response repertoire. Each participant will present the methodologies used in assessing interpersonal functioning from his approach as well as research results, including implications for preferred teaching behavior which can be drawn at the current state of the art.

As the representative of the causal orientation approach to interpersonal functioning, Ralph H. Ojemann of the Educational Research Council of America, will present "Effects of an Increased Understanding and Appreciation of Behavior Dynamics in Classroom Relationships." He will summarize several studies of the effects of teaching behavior dynamics to teachers and children. His viewpoint is that, in addition to providing specific instructions in behavior dynamics, the teacher must also provide a model of causal orientation toward human behavior in the way in which he conducts his class and interacts daily with his students. When both these conditions are met, even the very young student gains skills which facilitate his interaction with his environment.

The topic chosen by David N. Aspy, Northeast Louisiana University, is "Assessing the Effects of the Teacher's Levels of Interpersonal Functioning." He will present the development of a reliable and valid

methodology for assessing the teacher's levels of functioning as well as highlights of research using this methodology. In general, his statement is that student outcomes indices are significantly and positively related to the teacher's levels of interpersonal functioning. Therefore, preferred teaching behavior must include the utilization of high levels of interpersonal skills.

Daniel Kratochvil, Northeast Louisiana University, will discuss the importance of the teacher's specific response repertoire in "Determining the Teacher's Contribution to the Interpersonal Ecology of the Classroom." His thesis is that "what the teacher offers in the classroom is what the student gets;" therefore, assessment of instructional functioning must focus on the presence or absence in the teacher's repertoire of such skills as program development and physical and psychological classroom management. Research methodologies and results in varied settings (Career Education Programs, elementary classrooms, and higher education) will be reviewed.

Flora N. Roebuck, of the National Consortium for Humanizing Education, will speak on "Response Surface Analysis: Predicting the Intercepts of General Levels of Interpersonal Functioning and Categorical Measures of Specific Behaviors." Her thesis is that, in order to adequately assess and describe teaching behavior, the researcher must utilize data from both rating scales and categorical coding with the two kinds of data differentiated according to the level of abstraction at which the data collection occurs. That is, categorical coding yields a characteristic pattern of the *recurrence of specific behaviors,* whereas the rating scale yields a measure of the *meaning of a totality of behaviors.* Adequate description of interpersonal behavior requires assessment of the interaction of both kinds of data.

The question of preferred teaching behaviors is one of longstanding concern and importance to educational researchers and practitioners. By providing an opportunity for contrasting and synthesizing these three current approaches to research on the interpersonal functioning of the classroom teacher, this symposium will make a worthwhile contribution to the eventual development of a technology of preferred teaching behaviors.

6.04 LEARNING IN YOUNG CHILDREN (C)

Attention and Reading Achievement in First-Grade Boys and Girls

JAMES E. TURNURE and S. JAY SAMUELS, University of Minnesota

A behavior observation schedule was utilized to investigate sex differences in classroom attentiveness, and the relationship of such attentiveness to reading achievement among first-grade children, 74 boys and 58 girls. Girls were found to be significantly ($p < .001$) more attentive than boys, and to achieve higher word recognition scores ($p < .02$). Further, word recognition was found to be significantly ($p < .02$) related to attentiveness for the group as a whole, with reading readiness controlled in a covariance analysis. This latter finding replicates results obtained by Lahaderne with sixth-graders, but demonstrates that the relationship obtains with beginning readers, before a history of academic success–failure has been established.

Visual Matching Skills in Prereaders

LYNN CURRY, ROBERT ROSS, and ROBERT CALFEE, Stanford University

Matching of synthetic "words" of two to five letters is carried out with a high degree of accuracy under optimal testing conditions. Errors occur when children are unclear about the task, particularly (1) as to the meaning of *same* and *different;* (2) when order information is critical to a match, as in the example WAS-SAW, and (3) when memory usage is required. The display format, instructions, and nature of test materials of most existing readiness and early education tests introduce all three of the above requirements into measurement of visual perceptual performance.

The Relationship between Reading Medium and Prose Writing

BERNARD J. SHAPIRO, Boston University, and PHYLLIS P. SHAPIRO, Emmanuel College

The purpose of this study was to investigate the effect of two media of reading instruction on children's ability to write original compositions. Six hundred and forty-eight first-and second-graders (i.t.a. and T.O. pupils) each wrote two compositions which were evaluated on length, vocabulary level, content, and communication value. In both grades one and two, the essays of the i.t.a. sample were longer and at a somewhat higher vocabulary level. Further, in terms of both the Content and Communication scales, there were at both levels statistically significant differences in favor of the i.t.a. group.

A Comparison of the Effects of Rote, Principle, and Guided Discovery Strategies on Conceptualization in First-Grade Children

GARY COOKE, University of Toledo

The purpose of the study was to assess the degree to which the effects of three learning strategies influenced the conceptualization of a task. In addition, the study considered the effects of time on the conceptual scores of subjects. Measures were taken initially, after one week, and after six weeks. Twenty-four boy-girl pairs were matched by age and IQ and randomly assigned to three treatment groups. The three treatments were rote, principle, and guided discovery. The results of the three treatments were compared by analysis of variance. Significant differences were found between treatments (.01 level) and across time intervals (.05 level).

The Effect of Auditory Dimensional Preference on the Auditory Discrimination Performance of Children

MICHAEL L. HANES, Indiana University

Forty preschool Ss, representing low and middle socioeconomic status (SES) levels, and 20 sixth-grade Ss were tested on a 24-item, three-choice auditory discrimination task. Separate analyses of variance were performed on each of three dependent measures derived from the discrimination performance. Level of responding was a function of age for frequency and error scores, and a function of preferred dimension for frequency and intensity scores. Dimensional preference was not significantly affected by either SES or age differences. Significantly more Ss in all sample groups demonstrated a dimensional preference as compared to the number of Ss exhibiting no preference.

6.06 LANGUAGE BEHAVIOR (C)

The Effect of Set on Preferred Representational Mode

FREDERICK T. BAIL, University of Hawaii

In categorization tasks where symbolic and ikonic content were juxtaposed as possible bases of categorization, previous results had shown growth across early grade levels from predominant categorization using pictures to a greater use of words. Increases were not due to word knowledge, but were altered by the relative familiarity of the specific symbolic and ikonic categories. This replication with a different population extended those results by establishing a set for symbolic categorizations through manipulation of task order. The effect of set was strongest for young boys, a group with a traditionally high incidence of reading problems.

Do Error-Free Materials Maximize Learning?

MICHAEL S. USELMANN and MARGARET M. CLIFFORD, University of Iowa

This experiment examined the effects of increasing fifth- and sixth-graders' responsibility for the avoidance of errors on vocabulary tasks. Ss in one condition were asked to identify daily and correct four misdefined vocabulary words out of 20, prior to studying the words. Ss in the second condition were simply requested to study the meanings of the 20 words, each of which had been associated with an appropriate definition. The results suggest that increasing the S's responsibility for minimizing errors (first condition) facilitates retention for sixth-graders, while it hinders it for fifth-graders. The significant interaction ($p < .004$) on Ss' Liking was in direct opposition to the retention pattern. These results are discussed in terms of developmental theories.

The Effects of Three Types of Repetition and the Amount of Chunked Information on the Acquisition and Retention of Structured Information

PHILIP H. WINNE and WILLIAM E. HAUCK, Bucknell University

In a study of the effects of different types of repetition on the learning of chunked information, 72 Ss were assigned to a replicated design with four types of repetition and three different amounts of information as the independent variables. It was found that implicit but not explicit repetition of a chunk's "concept" during the study trial is the most effective in maximizing learning. In terms of quantity of information learned per unit of time, no repetition is most efficient. The utility of various repetitive techniques and a cognitive interpretation of repetition is discussed.

Linguistic Predictors of Properties of Set

HENRY L. JANZEN, University of Alberta, Edmonton

The present study was an attempt to clarify the relational and predictable aspects of language behavior to Uznadze's (1966) properties of set. One hundred and eighty-six subjects were given the Uznadze set tasks and were asked to write an essay of a biographical nature. Essays were keypunched and scored by computer using Page's (1966) SCORETEXT program. Step-wise multiple-regression analysis identified that linguistic codes which embody content that is analytical and abstract are indicative of individuals who excite quickly in the Uznadze set tasks. Developing linguistic skills was seen as a prime task of education in producing greater linguistic and cognitive differentiation.

6.07 LEARNING FROM TEXT (C)

Retroactive Interference and the Meaningful Learning of Textual Material

R. PAUL STRATTON and MITCH STEIN, University of Kentucky

Ausubel's notion of meaningful learning was tested with textual material which was conductive to retroactive interference (RI). Meaningful learning set was insured by providing integrative comparisons between the original (OL) and interpolated (IL) information which were inserted in the text or by having Ss take notes and actively make the comparisons. Compared to standard controls and treatment specific controls, retention was superior for these two groups on information which was conflicting or similar between the OL and IL passages. Further analyses indicated that improvement was mostly due to a reduction of response competition and, to a lesser degree, to an increase in response availability.

Indirect Review Effects Produced by Adjunct Questions

MARJORIE J. BILLINGTON and ERNST Z. ROTHKOPF, Bell Laboratories, Murray Hill, New Jersey

Can searching through memory to answer a question improve the ability to answer other indirectly related questions? College students ($N = 120$) read a 24-page text with two adjunct questions every four pages. On a retention test, performance was facilitated on items which had substantial elements in common with the adjunct questions, but which could not be answered directly from material in the adjunct question. Facilitation was inversely related to amount of material between relevant text segments and adjunct questions. The findings support the hypothesis that search through memory in answering a question strengthens or makes more available related mnemonic representations.

A Comparison of Idiosyncratic Study, Passive Reading and Inserted Question Treatments in Learning from Text

HARRY DENZEL, Southern Illinois University, and JACK H. HILLER, Southwest Regional Laboratory for Educational Research and Development

Limited evidence suggests that different kinds of inserted questions may be differentially effective in promoting learning from text. In this experiment, one of four groups inserted knowledge-level questions and a second group inserted comprehension questions. It was argued that (1) in previous adjunct-question research treatment groups have been forced to study in a manner that would not obtain outside of experimental conditions, (2) valid control groups have not been employed. In this experiment, adjunct groups were permitted freedom to study, and two controls, idiosyncratic study and passive reading, were run. Idiosyncratic study significantly ($p. < 001$) outperformed the other treatments.

Incidental Learning of Categorical Text Items Induced by Specific and General Search Directions

PERSIS T. STURGES, California State University, Chico, and LAWRENCE T. FRASE, Bell Laboratories

A 460-word prose story mentioned the proper names of 16 types of creatures. One hundred twenty-eight college undergraduates read the text and underlined a specific class of items (e.g., large sea creatures) or a general class (e.g., living creatures). Overt response to the smaller number of items (but presumable evaluation of text items against a more distinctive categorical criterion) increased recall without increasing reading time. Specific search produced especially high recall if Ss were informed about the text structure before reading, but not if the information was given after reading. The results have some implications for the use of learning objectives.

Instructional Objectives as Directions to Learners: Effect of Passage Length and Amount of Objective-Relevant Content

R. KAPLAN and E. Z. ROTHKOPF, Bell Telephone Laboratories, Piscataway and Murray Hill, New Jersey

Two experiments investigated the effect of passage length and number of objective-relevant sentences on learning from discourse and on study time. The main findings were as follows: (1) the use of objectives as directions resulted in increased performance, (2) objective-relevant learning varied inversely with number of objective-relevant sentences and passage length, (3) objective-relevant learning was unrelated to the proportion of relevant sentences to passage length, (4) specifically stated objectives resulted in more intentional learning than generally stated objectives, (5) the number rather than proportion of

objectives influenced learning, and (6) efficiency was inversely related to passage length and directly related to number of objectives.

6.08 READING: I (C)

A Comparison of the Effectiveness of Remediation of Non-Readers by Trained Mexican-American Aides and Certified Teachers

REBA L. KEELE, Brigham Young University

In a federally supported remedial program, three aides trained in the use of the Harrison structured tutoring model tutored non-reading children for eight weeks for an average of 16 minutes per day compared to one hour per day for the control group of comparable children. On a comparison of gain scores, the tutored children's gains were significant for sounding out letters, and decoding. Posttest comparisons for decoding and a sight work list of 139 words showed the tutored children were superior at the .01 level. The implication is that trained nonprofessionals can do more to remediate basic attack skills than certified teachers working with untrained aides in one-fourth the instructional time.

Models of Reading and Reading Disability

JOHN T. GUTHRIE, Kennedy Institute, Johns Hopkins University

Criterion referenced tests of phoneme-grapheme association skills were constructed and administered to disabled and normal readers. The strength of subskills in the disabled group was virtually identical to the comparable subskills in the normals of similar reading level. Both of these groups were inferior to normals matched on age who had completely mastered each of these skills. Intercorrelations among subskills were high positive for the normals and were largely insignificant for the disabled. A model is forwarded which suggests that interfacilitation among subskills is necessary for normal reading.

Factors of Predicted Learning Disorders and Their Interaction with Attentional and Perceptual Training Procedures

JOHN T. FRIAR, University of California, Los Angeles

Two factors of predicted learning disorders were investigated: (1) inability to maintain appropriate classroom behavior (BEH), (2) perceptual discrimination deficit (PERC). Three groups of first-graders (BEH, PERC, normal control) were administered measures of impulse control, distractability, auditory discrimination, and visual discrimination. Results verified that BEH children were impulsive and distractable, while PERC children lacked discrimination skills. Half of the BEH and PERC groups received attentional training, while the other half received perceptual training. Both groups then participated in a discrimination learning experiment. Results showed a significant GROUP x TRAINING interaction and significant improvement for the BEH group with attentional training.

Teaching Styles of Mothers of "Successful" Readers and "Problem" Readers in the First-Grade

NORMA FESHBACH, University of California, Los Angeles
ANTONIA BERCOVICI, California State College, Dominquez Hills

The purpose of this study was to determine the relationship between parental "teaching" behaviors and the child's relative success in reading in the first-grade. The experimental procedure entailed the observation of the behavior of 20 mothers of problem readers and 20 mothers of successful readers, while instructing their own and two other children in two different cognitive tasks. Significant differences were found between mothers of readers and nonreaders on a variety of dimensions such as negative reinforcement, controlling and directive techniques, and manual interference. Mothers of nonreaders also encouraged children to complete the experimental tasks signficantly faster than the mothers of readers.

Early Identification of Children with High Risk of Reading Failure

SEYMOUR FESHBACH, University of California, Los Angeles
HOWARD ADELMAN, University of California, Riverside

Two alternative models for identifying kindergarten age children with a high risk of becoming reading failures are compared. One model places primary emphasis on psychometric test procedures assessing linguistic and perceptual-motor skills related to reading readiness. The alternative strategy is based upon the kindergarten teacher's evaluation of the child's skills and behavior, with particular emphasis on the discrepancy between a child's specific competencies and those required for success in a particular first-grade classroom. Significant and encouraging correlations were obtained between the various measures taken in kindergarten and reading achievement test scores obtained at the end of first-grade.

6.09 EVALUATION OF SCHOOL SYSTEMS IN TWENTY COUNTRIES: A PRESENTATION OF THE FINDINGS FROM THE IEA INTERNATIONAL SURVEY (AERA)

TORSTEN HUSEN, University of Stockholm, Chairman

The objective is to inform AERA members of some of the results of the IEA survey in six subject areas: Science, Reading Comprehension, Literature, English as a foreign language, French as a foreign language, and Civic Education. This survey was conducted at three levels (10-year-olds, 14-year-olds and pre-university year) in twenty nations, four of which were developing nations.

The selection and construction of the various outcome measures will be described as well as an outline of the 500-odd input and process factors of the school system on which data were collected. Some of the problems of sampling and statistical analysis encountered will be described. The presentation will focus on the factors associated with between-nation, between-school, and between-student differences in achievement and how these were identified by multivariate analyses.

Torsten Husén, Institute for the Study of International Problems in Education, will give the background to the IEA international survey work and present the symposiasts. *T. Neville Postlethwaite,* International Institute for Educational Planning, in his paper, "Major Findings of IEA's Research in Science, Reading Comprehension and Literature," will discuss the factors associated with between-nation, between-school and between-student differences in Science, Reading Comprehension and Literature. In addition to indicating the more important teacher and school factors, he will also comment on the relative importance of the home and the school.

Judith V. Torney, University of Illinois, will present "Civic Education and Political Socialization." Dr. Torney will discuss findings from the IEA study of Civic Education which pinpoints the effect of school input variables (including variables such as teacher training, civics curriculum practices, and the teaching climate within the classroom) upon political attitudes (affective civics outcomes) with some reference to the role of cognitive civics outcomes upon these attitudes. Data were gathered from stratified samples of 14-year-olds and 12th grades in the Federal Republic of Germany, Finland, Iran, Ireland, Israel, Italy, the Netherlands, New Zealand, Sweden and the U.S.A.

John B. Carroll, Educational Testing Service, will discuss "Factors Accounting for Between-Student, Between-School, and Between-Nation

Differences in Performance in French as a Foreign Language." Dr. Carroll will discuss the test instrument in assessing the four skills of Reading Comprehension, Listening Comprehension, Writing and Speaking, and comment on the relationships among these four skills in various countries. In particular, Dr. Carroll will examine the differential pattern of prediction in different school systems to each of the four skills. *Clare Burstall,* National Foundation for Educational Research, will present a paper entitled "Factors Accounting for Between-Student, Between-School and Between-Nation Differences in Performance in English as a Foreign Language." Dr. Burstall will comment on the same types of results as did Dr. Carroll.

Harold J. Noah, Teachers College, Columbia University, will discuss "A Comparative View of 20 National School Systems." On the basis of the IEA survey in six subject areas, Dr. Noah will describe some major between-country differences in terms of the differential patterns of factors predicting achievement.

The ultimate aim of the IEA international surveys has been to go beyond a purely descriptive identification of the salient factors which account for differences between educational systems across national boundaries. Most of the studies conducted on between-school and between-student differences have been confined to one national system only, and the generalizations derived have been valid only for that particular socio-cultural pattern. The IEA project relates factors in the social, economic and pedagogic domains which are characteristic of a series of national systems to cognitive and affective measures of output. These relationships are studied simultaneously at various age or grade levels within some twenty countries or systems. An international replication of multivariate analyses facilitates making generalizations about strategic factors which account for differences between schools and students. The findings are aimed at providing policy makers and planners with a better knowledge base with which to make decisions about school structure and curricula.

6.10 ADAPTATION AND CHANGE IN LONG TERM PROGRAM EVALUATION (H, SYMPOSIUM)

EDWARD K. BROWN, School District of Philadelphia, Chairman

Evolution of a Bilingual Project Evaluation. Robert Offenberg, School District of Philadelphia. The changes in information gathering procedures and analysis designs which occurred during the first three years of a five year demonstration project, funded under ESEA, Title VII, are described. The project assesses both process and pupil performance outcomes. Within the general guidelines of the Office of Education's policy, the project has been free to modify and change its evaluation plans each year. As a result of forces within the community, increasing confidence in program procedures, and expressed needs of the funding agency for hard data, evaluation of pupil performance in project has tended to move from criterion-referent approaches, using the project-specific measuring devices, to more classical experimental designs, using standardized, norm reference measures of pupil performance. In contrast, evaluation of the implementation of the program has developed from gathering rigid quantitative data to the more open approaches in which interviews are used extensively. The changes in the process evaluation were mandated by a need to know not only where discrepancies existed in the program, but also to know the underlying problems, needs, and insights which led to the discrepancies, some of which were improvements on the original plan.

Relationship of the Follow Through Evaluation to Local Needs. Judy Goodwin, School District of Philadelphia. The discrepancies between the comprehensive design for Follow Through evaluation and the program management's needs of the seven models in Philadelphia are discussed. The national evaluation has focused on pupil performance and achievement data. The local evaluation effort, conducted since 1968, has attempted to undergird the objectives of the national evaluation by satisfying the needs of the model sponsors, local liaison personnel, principals, teachers, and the project administrator. The first local focus was the assessment of the correspondence between the philosophy/strategies of the seven models and the representations that had been established in the participating schools. For this reason, the monitoring activities and evaluation procedures emphasized concordance analysis techniques. The second focus of the local evaluation developed in response to the needs of classroom teachers who needed immediate feedback, in order to determine whether the methods of the model were producing positive effects. The analysis procedures consisted of codifying the instructional evaluation procedures in the classroom and the interpretation of mastery (criterion) scores for some of the model sponsors.

Changes in School Management Personnel's Needs for Evaluation Information. Edward K. Brown, School District of Philadelphia. A careful study of the kinds of requests for information made by school management personnel at different times during the history of major funding periods was undertaken. From this investigation there appeared to be at least three kinds of information school management personnel perceived as being important: program specific, comprehensive, judgmental. Program specific information is most desired in the early stages of project implementation, when management is interested in determining whether the project components they have approved are consistent with the specification of the contractual agreements. Comprehensive program information, regarding the success of the program in meeting the specified goals, is most requested after the program has been operational for more than one year. School management personnel want to have detailed program information to ascertain the impact of the program on specified target groups. In the last phase, school management personnel are most interested in judgmental information. They ask for recommendations and alternatives which follow directly from the quantitative data (deductive judgments).

6.11 COGNITIVE STYLE (C)

Concrete and Abstract Thinkers at Three Grade Levels and Their Performance with Complex Concepts

DEAN L. MEINKE, CAROLYN S. GEORGE, and JUDITH M. WILKINSON, The University of Toledo

A pool of Ss was identified as abstract or concrete thinkers at grade levels four, six, and eight. Ss were selected at random from this pool at each grade, for each sex, and were administered a test for performance with complex concepts. A significant effect was found for grade level where performance increased as a function of grade level. Abstract thinkers performed significantly better than concrete thinkers. There was no significant effect found for sex of S. There were no significant effects found for any of the interactions. The results were interpreted in terms of their implications for classroom teachers and curriculum planning.

The Effects of the Analytic-Global and Reflection-Impulsivity Cognitive Styles on the Acquisition of Selected Geometry Concepts

BARBARA NELSON, Wisconsin Research and Development Center for Cognitive Learning

Two ATI studies examined the effects of the analytic-global and reflection-impulsivity cognitive styles on the acquisition of geometry concepts presented in lessons containing or not containing verbal emphasis and in lessons requiring discovery or expository learning. Questions specifically related to the aptitude variables, treatments, and operations under investigation revealed differences between the analytic and global Ss in Study I and between treatments in both studies.

Analytic Ss were superior to global, verbal emphasis was superior to no emphasis, and expository was superior to discovery. However, these specific dependent measures failed to reveal an aptitude by treatment interaction in either study.

Developing Mathematical Materials for Student's Cognitive Style

JOHN C. PETERSON and ROBERT HANCOCK,
Eastern Illinois University

This study describes efforts to create instructional materials which will be cognitively appealing to students demonstrating aptitude for figurally oriented material. Ss were given a battery of tests designed to measure their figural, semantic, and symbolic aptitudes. Ss then studied a short unit on network tracing. Criterion variables were scores on tests of: immediate retention, retention after one week, and retention after four weeks. Group means for Ss with high figural aptitude were significantly higher than for Ss with low figural aptitudes. There were no significant differences between either verbally or symbolically oriented Ss and non-verbally or non-symbolically oriented Ss.

Cognitive Style and Hypothesis Testing

J. KENT DAVIS, Purdue University

The purpose of this experiment was to determine how an individual's cognitive style influences hypothesis testing behavior. Three hundred seventy-two Ss were administered the Hidden Figures Test as a measure of cognitive style, and 24, four-trial learning set problems. Ss received 18 outcome problems (feedback) and six non-outcome problems (no feedback). Comparison of analytic and global Ss indicated that, in general, analytic Ss were more efficient in hypothesis testing than were global Ss. There was also a tendency for global Ss to commit more errors (non-classifiable hypotheses) than analytic Ss and to perseverate more than analytic Ss when a solution role changed.

An Analysis of Oral Reading Behavior of Reflective and Impulsive Beginning Readers

JOYCE E. HOOD and JANET R. KENDALL,
The University of Iowa, and DORIS D. ROETTGER,
Drake University

The oral reading of impulsive and reflective first-graders was analyzed in order to better understand the reading process and its development. The children read orally the story in their reader beyond that which each had just studied. Impulsive children made more substitution errors and paid less attention to graphic cues. They were also less likely to correct errors which were grammatically unacceptable with the following context. A comparison of Metropolitan Achievement Test results showed that impulsive children were significantly lower in total reading than reflective children. Additional training for impulsive children in error correction strategies was suggested.

6.13 STUDENT REACTIONS TO COMMUNITY COLLEGES AND THE ATTRITION PROBLEM (E)

Student Reactions to Community Colleges of Different Sizes

PAMELA ROELFS, Educational Testing Service

This study describes student perceptions and experiences in community colleges of different sizes, providing data on the following questions: (1) are students' reactions to the intellectual and social environments of their colleges influenced by student body size? (2) are these environments optimal in community colleges with enrollments of 2,000 to 5,000 students? An average of 272 students at each of 21 community colleges completed a questionnaire. Responses of the college samples indicated that items concerning the social environment–student relations with other students, student involvement in college activities, and student contact and rapport with faculty and administration–were affected by college size.

Dropout Prediction at an Urban Community College following Open Admissions

NORMAN EAGLE, Bronx Community College of the City University of New York

The purpose of this study was to identify entry variables differentiating between drop-outs and "stay-ins" at an urban community college, following the implementation of an open admissions policy. The variables investigated were: high school averages in English, mathematics, science; years of high school mathematics; reading score; and semesters deficient (by pre-open admissions entrance standards) in mathematics, science, and foreign language. Also considered were high school type, high school science background, remedial placements at the college, and "open-admissions status." Analyses were performed separately for seven curriculum areas and for all combined. Only mathematics and type of high school proved effective predictors, and only for a few specific curriculum areas. "Open admissions" students did not show significantly higher drop-out rates than "regular" students. Non-cognitive variables are seen as having greater promise for the identification of the potential drop-out.

Sex Differences on Factor Dimensions Related to Withdrawing from College

JUDITH E. ALBINO, The University of Texas at Austin

Responses to an 80-item problems inventory were factor analyzed in order to identify major areas of concern or dissatisfaction among 1,757 students voluntarily withdrawing from the University of Texas at Austin. Factor scores on 11 problem dimensions were analyzed, and univariate analyses and a multiple discriminant analysis were computed. Males and females were found to differ significantly on six of the 11 dimensions, and the obtained separation on the discriminant function was also highly significant. The results are discussed in terms of motivational theory and the concept of a "motive to avoid success" in women.

6.16 RESEARCH ON OCCUPATIONAL CLASSIFICATION (E)

Differential Perception of Occupations with Increasing Age

KEITH J. EDWARDS, DEAN H. NAFZIGER, and
JOHN L. HOLLAND, Center for Social Organization of Schools,
The Johns Hopkins University

Intercorrelation matrices of the Vocational Preference Inventory scales obtained from the literature were examined by means of latent root and factor analyses to test the hypothesis that a person's perception of occupations becomes more differential with age. Data for males and females for elementary, high school, college, and employed adult groups were included. The results supported the differentiation hypothesis with a major increase in differentiation occurring between high school and college. In addition, the factor analytic results of Cureton (1970), based upon occupational interest data from 16,000 male and female, junior and senior high school students, were interpreted in light of the differentiation hypotheses and found to be supportive. The implications for measurement and vocational development are noted.

Cluster Analyses of the SVIB, MVII, and Kuder OIS as Tests of an Occupational Classification

SAMUEL T. HELMS and DEAN H. NAFZIGER,
Johns Hopkins University

This paper compares Holland's occupational categories with groups of occupations that result from the application of McQuitty's Iterative, Intercolumnar Correlational Analysis to the scales of the SVIB, MVII, and Kuder OIS for men and women. The results indicate that clusters of occupations exist that are internally consistent, and these usually agree with the groups of occupations in Holland's classification. The hierarchical structure of the clusters follows the hexagonal ordering of Holland's occupational categories that has been suggested in other studies. In addition, the usefulness of all three letters in Holland's occupational classification was demonstrated.

Applying an Occupational Classification to a National Representative Sample of Work Histories of Young Men and Women

DEAN H. NAFZIGER, JOHN L. HOLLAND,
SAMUEL T. HELMS, and JAMES M. McPARTLAND,
Johns Hopkins University

Holland's occupational classification was applied to the work histories of national representative samples of 5,225 men and 5,159 women aged 14 to 24. It was found that the category of a person's earlier jobs forecasts the category of his later jobs and the category of his occupational aspirations. These results were consistent for men and women regardless of race. In addition, some support was found for the hypothesis that the Holland occupational category for young men and women is related to the occupational category of their parents, and that spouses tend to have the same occupational classification.

6.17 CHANGE ORIENTED RESEARCH IN HIGHER EDUCATION (H)

An Open University for the Midlands: Why and for Whom?

ROBERT D. BROWN, University of Nebraska

Characteristics of potential students for a multi-media off-campus approach to college education were determined. Key questions focused on unique student characteristics and needs which would influence course development. Responses from 4,000 adults and high school students were screened to develop a pool of "likely" clientele. This group proved to be significantly different from an uninterested group, but quite heterogeneous in age, education, and interests. Results indicate that planners of a program modeled after England's Open University must attend to individual differences much greater than those encountered in typical on-campus settings.

Correlates of Student Preference Ratings

NORMA F. FURST and ALAN COHEN, Temple University;
BARAK ROSENSHINE, University of Illinois

Analysis of student responses in 1,200 undergraduate classes to a 40-item Course Evaluation Questionnaire yielded the following results. None of the eight demographic variables correlated .2 or higher with any of 30 items on course and instructor. Variables correlating .4 or higher with five preference criteria were: clarity of instructor's presentation, value of class, interest of subject matter, and instructor's emphasis of student enjoyment of course. Variables correlating negligibly (.2 or lower) with all criteria were: teacher lecturing, independent papers, class participation, and application necessary for final exam.

Cross-Cultural Research and Teacher Preparation in the Urban Setting

DAN LANDIS, University City Science Center, and
JOHN L. HAYMAN, JR., The Pennsylvania State University

Problems of rapport in urban schools usually result from lack of overlap in the subjective cultures of teachers and students. "Subjective culture" refers to the manner in which a person perceives his social environment. Subjective cultures were measured and the lack of overlap noted and related to classroom interaction and student performance. Results indicated the existence of the hypothesized gap in subjective culutres. Experimental training programs, designed to improve the intercultural skills of inner-city teachers, are described.

In-Service Training for Elementary Teachers: Increasing Student Achievement through a Joint University School District Project

MARCIENE S. MATTLEMAN, NORMAN F. FURST,
PAULA E. PLOURDE, Temple University

This paper reports on an in-service training project for inner-city elementary teachers which was jointly sponsored by Temple University and the School District of Philadelphia. Its purpose was (1) the training of teachers in a school setting through graduate courses, and (2) the determination of whether the degree of implementation of program specifics on a daily basis results in changed teacher behavior and increased pupil performance. Specially devised instruments are described, and findings as to the relationship among hypothesized implementation variables and hypothesized relationships among these variables and student gains are presented.

6.18 TECHNICAL DEVELOPMENTS IN EVALUATION AND ASSESSMENT (H)

Predicting Mobility Using Personal and Geographic Characteristics and Its Use in the Needs Assessment for Vocational Programs

RICHARD A. GUSTAFSON, New England Resource Center for Occupational Education;
RICHARD E. WINSTEAD, MIT Department of Economics/NERCOE

Three hundred randomly selected subjects were interviewed concerning their personal characteristics and the geographic area of residence. These factors, including occupation, age, education level, and measures of mobility, were analyzed using stepwise multiple regression to isolate predictors of personal mobility. Multiple correlation coefficients above .85 were obtained when eight independent variables were used. The most useful predictors of mobility were occupation, age, and education level. Results of this study will provide the planners of occupational education programs with knowledge about personal mobility which can be used in conjunction with labor supply and demand when planning for additional vocational programs.

A Multi-Media System for K-6 Career Education Programs

MARLA PETERSON, Eastern Illinois University

Fifteen multi-media packages of instructional materials (OCCUPACS) were developed in a laboratory school setting. Prototype materials which feature many types of concrete objects and manipulatives were included in the packages. The objectives of the presentation were to: (1) demonstrate how child development data and career development theory have been translated into instructional materials for K-6 children, (2) describe how the ideas of children were used in the development of the materials, and (3) discuss how instructional

materials can be designed so that the materials help reduce the teacher anxiety that is associated with the introduction of new instructional approaches.

Assessment of Ethnic Interaction in a Desegregated/Integrated Urban Elementary School Using Photography as an Observational Research Device

PETER B. GREGORY, Evaluation and Research Analysts

Play and lunch interactions of black, Asian and white ethnic groups were assessed in a desegregated/integrated urban elementary school, employing photography as an observational tool. Assigned play areas and lunch areas were randomly examined on a selected quota sample of classrooms (N=159). Free choice areas, also selected on a random basis, were observed on the school's total population (N=675). Of all the observations made, excluding the library, some form of integration (total or partial) was taking place 85% of the observed instances, although white-black interaction accounted for only 3% of the total observations and Asian-black for 12%. Male and female segregation was found in 92% of all observations.

A Sociometric Analysis of Friendship, Leadership, Workship Patterns in a Desegregated/Integrated Elementary Urban School

NOELE KRENKEL, San Francisco Unified School District

The desired choice patterns of friendship, leadership, and classroom workship of children attending a desegregated/integrated elementary urban school were determined. Utilizing quota sampling, 159 children were examined on a three-choice, six-criteria, non-ranked sociometric test. Children were not asked to make rejections. Cliques and isolates/rejects were examined as to their ethnic makeup. Ethnic self-preference was examined, and the relationships between children's sociometric position on workship questions and achievement were investigated. White, black and Asian children did not appear to have been influenced by ethnic grouping in friendship, leadership and workship choices. A preponderance of ethnic self-preference was not evident in any of the questions. Comparisons between workship choices and achievement did not appear significant except in the case of white isolate children who were found to have achievement scores six months above grade level. Patterns of friendship, leadership, and workship choices were found to be dependent on sex, although open classrooms had more cross-sex choosing than standard classrooms.

Assessment of Ethnic Group Self-Concepts in a Desegregated/Integrated Urban Elementary School

DAN CAFFERATA and NOELE KRENKEL, San Francisco State University

In an assessment of the effects of school desegregation/integration in an urban school, a pictorial semantic differential instrument which measures self-concept was given to a quota sample of intermediate classes (4-6 grades). One hundred and fifty-nine children representing black, Asian and white ethnic groups were sampled. Self-concept scores across groups, grades, standard and open classrooms, were examined. No significant differences were found across ethnic groups or grades within the five concepts utilized on the instrument. All ethnic groups ranked the five concepts in the following order from high to low: me when I grow up; feelings about self; skin color; how children feel about me; school. A significant difference was found at the .05 level between open and standard classrooms on the concept "How children feel about me"; open classrooms have a more positive mean value on this concept.

7.01 EQUALITY OF EDUCATIONAL OPPORTUNITY: ETHNIC PERSPECTIVES (F)

Ethnicity: Science, Being, and Educational Opportunity

JAMES STEVE COUNELIS, University of San Francisco

Ethnicity is a differentiating concept, one whose parameters are unclear. This paper attempts to clarify the concept of ethnicity by its reality.

The approach used involves integrating three elements. The first element is to delineate what science there is on ethnicity. The second element is to map the internal phenomenology of ethnicity from autobiographical data. The last element is to survey the terrain of educational opportunity found in the ethnicity of students and their instructors, regardless of level of education. These elements will be integrated by a systems understanding of education, education being construed to be both the transmission and the creation of knowledge.

Ethnicity and Equality of Educational Opportunity

RICHARD KOLM, Catholic University of America

The relationship of learning to general motivational aspects and to self-concept is well recognized. The significance of personal identity to the above concepts is more complex. However, it is generally recognized that the development of personal identity occurs through interaction with others, and that personal identity is a basis of relations with others, of role-learning, of role performing, and of the formation of larger social perspectives. This analysis of meaning of patterned social relations to the development of personal identity leads to the postulate of cultural differentiation in attitudes toward learning and in learning patterns themselves. It is assumed that culture, defined as a tool for survival and for adjustment to situational conditions, develops in each case unique and specific patterns of learning and of attitudes toward learning.

Pluralism and Equality of Educational Opportunity: A Black Perspective

EDGAR G. EPPS, The University of Chicago

In this paper several definitions of equality of educational opportunity are presented and discussed with respect to their implications for black Americans. Inequality may be defined in terms of degree of racial segregation, relative availability of financial and other educational resources, relative effectiveness of educational programs in encouraging cognitive growth and the development of positive attitudes toward school and self, and availability of opportunities to learn about and develop pride in one's own cultural heritage. It is argued that equality of educational opportunity implies much more than racial balance or equal facilities. The basic requirement is equal respect for different racial and cultural groups. This implies moving away from universalistic notions about curricula and centralized control of school systems toward pluralistic programs and decentralized control.

Recent Trends in Anti-Egalitarian Social Research: A Consideration of the Possible Deterrent Effects on Equal Educational Opportunity for Minorities

Social researchers have too often assumed away the issues of goals, the institutional structure of schools, and some of the main reasons for public education. This can lead to some of the anti-equalitarian conclusions inferable from the research of Armor, Banfield, Glazer, Herrnstein, Jensen, Moynihan, et. al., all of whom write as though there were a separation of the investigator and the investigated, hence denying the coterminous nature of the two. The uncritical extension of

some current research premises and approaches seems likely to further discourage perception of available alternatives and institutionalize the very value premises and assumptions which have led to, or now sustain, existing difficulties in moving toward equal educational opportunity.

7.02 LEARNING IN PUBLIC PLACES (F)

The Zoo

HELEN L. HOROWITZ, Union College

This paper discusses the American zoo as an educational institution. Zoos were established to shape the perceptions and understandings of Americans and to influence their actions as well as to afford pleasure and recreation. Both unwittingly and by design, zoos have structured the confrontation of Americans with wildness, establishing the terms in which animals--and thereby man--have been viewed and comprehended. In analyzing the effect of a zoo, one must look at the landscape design of the park, the architecture of the animal buildings, and the provisions for amusement and refreshment.

The Museum

RICHARD RABINOWITZ, Director of Education,
Old Sturbridge Village, Mass.

This paper will treat the museum as an agent of historical instruction. It will examine the intentions of various curators and the ways in which these institutions consciously and unconsciously instruct the public. Special reference will be made to the development of the 17th century Puritan community as reconstructed in the Old Sturbridge Village, Massachusetts.

8.01 ISSUES IN IMPLEMENTING A COMPETENCY-BASED PROGRAM FOR TEACHER PREPARATION (C, SYMPOSIUM)

SAM J. YARGER, Syracuse University, Organizer

An undeniable thrust toward competency-based programs of teacher preparation exists. Many colleges and universities have committed themselves to the development of programs designed to embrace this concept. In addition, the U. S. Office of Education, state departments of education, AACTE and other professional groups have endorsed the concept of competency-based or performance based-teacher preparation. As with any innovative thrust, problems exist that threaten to inhibit and perhaps destroy this thrust before the children in America's schools reap the benefits of its products. It was with this rationale that the symposium objectives were developed: 1) to create an understanding of five critical issues that arise in attempts to implement a competency-based program for teacher preparation; 2) to offer approaches and/or strategies directed toward the resolution of these issues; and 3) to stimulate teacher-educators to recognize and ascribe importance to the operational problems of a competency-based teacher preparation program.

The symposium will be chaired by Kenneth Howey, University of Minnesota. W. Robert Houston, University of Houston, will serve as the discussant. His role will be to synthesize the presentations, and also to emphasize controversies in the presentations and suggest alternative strategies.

"Staff Development: Do We Really Have to Change?" will be presented by Sam J. Yarger, Syracuse University. Are there assumptions underlying competency-based education which require teacher-educators to examine their position? Are there new roles and functions that educators must serve? This presentation claims that there are, and suggests that unless they are carefully delineated and used as developmental guidelines, little real change will result. The issues will be detailed, and staff development strategies will be suggested.

In "Assessment Problems: Real or Imaginary?" by Thomas J. Quirk, Educational Testing Service, the contention is that competency-based teacher preparation places new critical demands on the field of educational measurement. The spector of whether or not the field of measurement can meet these increased demands is raised. Such issues as norm referenced versus criterion referenced instruments, use of checklists, establishing cutoff points, reliability, and validity are presented. Finally, the presenter suggests strategies designed to protect the integrity of teacher education while promoting the growth of a worthwhile approach to the preparation of teachers.

"Monitoring and Management: Are New Strategies Needed?" is being presented by Thomas Dunn, University of Toledo. The manilla folders in the records room used by the advisor once or twice a year will no longer serve as techniques for monitoring and managing a competency-based program. With the replacement of credits and courses by skills and competencies, new management problems arise. Self-pacing, flexible entry and exit points, individualized programs, and a field-based emphasis all suggest that unless special attention is given to systematic planning, monitoring and management, our new programs are likely to become monsters that we cannot control. Strategies for the appropriate use of modern technology will be presented as an alternative to what would otherwise be chaos.

Hugh Baird, Brigham Young University, will present, "The Institution: Building Bloc or Building Block?" Institutions of higher education frequently are viewed as anachronistic institutions, wrought with rules, regulations, and policies that discourage any type of reform. Faculties and administrators often respond to proposed change by citing all of the roadblocks, thus discouraging those who want to attempt something different. University policies have frequently been made with a liberal arts program in mind, not recognizing the specific needs of professional programs such as teacher preparation. Grading, credit hours, semesters, "qualified" professors, and academic standards are all issues that confront the competency-based program developer. These issues will be detailed in this presentation, along with solutions that have worked and suggested strategies that offer promise. Emphasis will be given to program implementation within existing university policies.

Donna S. Dolinsky, University of Toledo, will present, "The Student: Does He Have an Active Role?" Developers of new programs often prefer to work in their offices late at night assembling programs that are educationally defensible, politically feasible, economically sound, and certain of professional acceptance. The problem is, however, that the program consumer, i.e., the student, frequently does not understand and therefore does not accept the concepts inherent in the innovation. In order to ensure a viable competency-based program, the student must be an active participant, from initial discussions through on-going implementation. The student must be aware and accepting of the problems and the risks as well as of the potential payoff. Proven methods for active student involvement will be presented as well as strategies for improving conventional avenues of communication. Actual student analyses will be offered to support the proposed suggestions.

In light of the fact that there are numerous pressures being exerted (USOE, State Departments of Education, AACTE, etc.) in the move toward competency-based or performance-based teacher preparation, it is only logical that we should explore the problems that have already emerged in initial implementation attempts. This will not only allow new programs to benefit from the experiences of others, but it will also bring to the fore many of the issues that might otherwise be overlooked. Innovation in education has a long, sad history of being poorly planned, inadequately tested and consequently discarded--thus branding potentially good ideas as failures. Teacher-educators who are committed to the concept of competency-based education *must* anticipate problems and plan for them if this thrust is not to suffer the same fate.

Because of the recentness of the movement toward competency-based programs, there exists a research vacuum. Although the primary objectives of this symposium were not heuristic in nature, there can be no doubt that the delineation of needed research areas will be a welcome spin-off. The output of this symposium could well become the basis for future reports at professional conferences.

8.02 MAXIMIZING EFFECTIVENESS OF HUMAN RESOURCES IN INDIVIDUALIZED INSTRUCTION (C, SYMPOSIUM)

ADRIAN VAN MONDFRANS, Brigham Young University, Organizer

Since the inception of individualized instruction various techniques of individualizing have been implemented in the public schools, each with its own advantages and disadvantages. Programmed textbooks are not helpful to the nonreader; teaching machines often had poor quality instructional materials, and computers are neither cheap nor available to all. Volunteers suffered from lack of role definition, and aides found their role to be all too often menial clerical tasks. As more federal monies have been allocated to the concept of tutoring, more programs have developed in which tutors are utilized in various ways. Tutorial models in which aides, volunteers, and peers are provided with training to allow them to become an integral part of an individualized instructional system show promise. There is still much to be learned about the most effective use of human resources in individualized learning. The objectives of this symposium are to: 1) explore research about existing programs which use peers and paraprofessionals as individualizing elements in an instructional system, 2) question people involved in these programs about the strengths and weaknesses of their research and philosophy, and 3) explore suggestions related to the implementation of these programs as aids to learning in existing instructional systems.

The participants are uniquely qualified to examine these facets of the topic. Louis Bright, Baylor University, has had broad national exposure to the entire concept of tutoring. His presentation, "Individualization with Aides," will focus on effective use of the nonprofessional adult to expedite and individualize learning as it has been tried nationally. Kenneth Weingarten, Human Resources Research Organization, in "Adult Peers in Individualization," will explore the research conducted at HumRRO in the use of peer instructors in military instruction. Grant V. Harrison, Brigham Young University, who is the developer of structured tutoring, will speak on "Student Peers as Human Resources" and discuss research about children and the advantages and problems of implementation of this type of instructional system.

This symposium should be of special interest to educators who are concerned with making individualization a real possibility in other than laboratory settings. Any researcher who is interested in the application of research findings to the improvement of education will find the research of these participants to be a model.

8.07 TEACHER-STUDENT LEARNING AND PERFORMANCE (C)

Strategies for Developing Reciprocity Between Educational Researchers and School Personnel

MAURICE D. FISHER, Stanford University

Several projects in the Teaching in Low Income Areas Program have begun to develop procedures for communicating research results to participating teachers, the rationale being that researchers must establish a positive relationship with personnel in low income schools in order to conduct research which can improve teacher strategies. This paper describes teachers' reactions to results of a project that concentrated upon identifying teacher strategies which produce high levels of student engagement in classroom learning. In the 1972 Teacher Feedback Workshop, all teachers received individualized feedback from trained "feedbackers." Teacher strategies which had high and low engagement impact on students were identified.

Developmental Aspects of Pattern Prediction Performances under Inductive versus Inductive-Deductive Conditions

WILLIAM F. COX, JR. and HAROLD J. FLETCHER, Florida State University

Twenty subjects in each of the 9-, 10-, 11-, 12-, 13-, and 14-year-old age groups followed either their own pattern identification sequence (inductive-deductive) or that of an age, sex, and IQ paired subject (inductive) to predict the 36 cell pattern identities. Performance generally improved with age. The expected superiority in cell and pattern predictions for the inductive-deductive condition was nonexistent. In fact, pattern predictions from inductive only subjects occurred earlier, more often, and were more correct with less information. Results suggest solution generation performance may be hindered by solution verification activities.

The Influence of Prior Information Concerning Course Aptitude on Verbal Participation

ROBERT S. MEANS, West Chester State College, GLADYS H. MEANS, Cheyney State College, and BILLY F. Elsom, Oklahoma State University

Seventy-two Ss in adolescent psychology were told they were being administered an aptitude test used to predict course achievement. Ss were rank ordered by past grade point average. The median break produced two groups—high and low GPA. By groups, Ss were randomly assigned to one of three treatments. Treatment I Ss were told their performances reflected high aptitude for course mastery. Treatment II Ss were told their scores revealed little course aptitude, while Treatment III Ss were given no information. Results indicated no significant verbal participation differences from treatments, but GPA and interaction efforts were significant.

8.08 CREATIVITY (C)

The Interdependence of Creative Attitude and Creative Ability

THOMAS J. Rookey, Research for Better Schools, Inc., and FRANCIS J. REARDON, Pa. Dept. of Education

This project studied pupil creativity in terms of the interdependence of the affective and cognitive domains. The relationships of the two facets were studied over the period of a full school year with 945 fifth-grade pupils from a small urban district. Growth was apparent in both domains during the period of the study. Parallel testings of the two domains correlated only slightly; this indicated independence. Most significantly, creative attitude served as a predictor of both attitude and ability while creative ability seemed only to predict itself.

Vicarious Influences on Children's Creative Behavior

BARRY J. ZIMMERMAN, University of Arizona and Arizona Center for Educational Research & Development

A model's influence on the creative behavior of 120 fifth-grade children was studied in four variations. Separate groups observed a model who was either high or low in the fluency or flexibility creativity dimensions. High model fluency was found to increase significantly child fluency and flexibility measures on a parallel task. A marginally

significant increase in observer fluency was noted on a stringent generalization task. Contrary to predictions, increased model flexibility produced significant decreases in observer fluency and flexibility measures on both the parallel and stringent generalization tasks.

The Effects of Multi-Age Multi-Grade Programming on Students' Verbal and Non-Verbal Creative Functioning

MARK I. OBERLANDER, Institute for Juvenile Research, and
DANIEL SOLOMON, Montgomery County Public Schools

Within the framework of a large scale evaluation project of a new educational environment, this study tested the effects of Multi-Age Multi-Grade grouping on students' divergent cognitive functioning. Third, 4th-, and 5th-graders from Multi-Grade classrooms were compared with control groups from adjacent schools (enrolled in homogenous, self-contained classrooms). Verbal creativity scores (Uses Test) and non-verbal creativity scores (Torrance, Figural Form A) served as the dependent variables. Results indicated that experimental subjects, studying in Multi-Grade settings, obtained higher fluency, flexibility, and originality scores on both verbal and non-verbal measures. The individual's divergent cognitive functioning is apparently enhanced within a Multi-Grade school setting.

Convergent, Divergent, and Esthetic Ability and Bias in College Students: Their Relation to Personality and Preference for Major Subject and Instructional Method

MARTYNAS YCAS and CHARLES E. PASCAL, McGill University

Hudson has observed that the bias of an individual's ability is a good predictor of personality and major subject choice. This study examined 209 college students tested for bias toward convergence, divergence, or esthetic sensitivity, as measured by the Revised Art Scale. Scores and biases were related to personality variables, preference for major subject, and evaluation of 16 different instructional methods. Bias of cognitive ability proved to be a better predictor of personality and subject choice than the variables taken singly. Students in different subjects preferred different instructional methods, as did students of different cognitive bias.

8.09 READING: II (C)

Effect of Two Word Deletion Schemes upon the Comprehension of Five Levels of Telegraphic Prose

CLESSEN J. MARTIN and CHARLES A. PANTALION, JR.,
Texas A&M University

This study tested the feasibility of developing telegraphic prose based on a subject deletion scheme. Five hundred and fifty subjects were randomly assigned to one of 11 treatment conditions: five subject reduced versions of a passage, five computer reduced versions, and a traditional version. Subject and computer versions were reduced by 10, 20, 30, 40, and 50%. Results showed subject reduced versions of 30 and 40% were equal to the traditional version on comprehension. The subject deletion scheme was superior to the computer deletion scheme and reading times were less with increasing percentages of deletion.

Influence of Interests on Sex Differences in Reading Comprehension

STEVEN R. ASHER and RICHARD A. MARKELL,
University of Illinois

Evidence exists that elementary age boys' reading performance is below that of girls. The present research evaluated the impact of interest level on boys' and girls' reading comprehension. To assess interests the children rated a series of pictures. Later a cloze procedure was employed in which children read paragraphs corresponding to each of their three highest and lowest rated pictures. The measure of reading comprehension was the number of deletions correctly supplied by the subject. Results indicated that children comprehended more of high interest paragraphs with sex differences smaller in the high interest category.

The Span of the Effective Stimulus during Fixations in Reading

GEORGE W. McCONKIE, Cornell University, and
KEITH RAYNER, Massachusetts Institute of Technology

A computer based system has been devised for tracking a person's eye as he reads from text displayed on a cathode-ray tube, which permits dynamic changes of the display related to the point of fixation. This study investigated the effect of limiting the width of the area around the fixation point within which the subject could see the text he was reading, and beyond which were various forms of mutilated text. The results suggest that during a fixation a reader picks up useful information from an area at least 30 or 35 characters wide on the line from which he is reading.

Articulation during Silent Reading

SEAN PETERS and SUSAN ROSEN, Rutgers University

In this attempt to replicate Pintner's (1913) study, a verbal distractor was used to demonstrate that silent articulation is unnecessary for comprehension of written materials for most mature readers. A repeated measures design allowed each of the 12 participants to serve as his own control. Although all comprehension scores were above chance level, indicating that subjects could comprehend the material while voicing an irrelevant distractor, a two-by-twelve analysis of variance revealed that the subjects did comprehend the material significantly better when no articulated distractor was present. The practice effect was also analyzed.

Rapid Reading as A Function of Redundancy Reduction: Theory and Research

PHIL L. NACKE, University of Kentucky

This paper presents the theory and research related to rapid reading as a function of redundancy reduction. The linguistic motivation for considering certain items of discourse as redundant on syntactic and semantic grounds is given, along with an algorithm for the deletion of redundant words from English prose. The implications of the deletion procedures will be discussed particularly as they relate to further investigation of the rapid reading process and the practical applications for instruction. Aspects of research in which the redundancy reduction procedure has been applied will be discussed.

8.12 THE DEVELOPMENT AND MANAGEMENT OF A PILOT PROJECT FOR A READING ASSESSMENT SYSTEM (H, SYMPOSIUM)

MURIEL M. ABBOTT, Organizer

The objectives of the symposium are to provide an example of the institution of a systems approach to the solving of an educational problem and to relate this approach to current measurement issues such as criterion-referenced interpretation of test scores and individualization of assessment, diagnosis and instruction. A pilot project in reading

assessment was developed and implemented. It consisted of an integrated package, all components being interrelated through behavioral objectives. The system included a set of behavioral objectives, instructional programs designed to lead to their achievement, a means of measuring the extent to which objectives are achieved, and provision for feedback to decision-makers. Representatives of the test publisher discuss the design and production of the assessment system. Representatives of the local educational agencies discuss implementation and function of the pilot project in the actual school situations.

Muriel M. Abbott, Harcourt Brace Jovanovich, Inc., will discuss "Rationale Underlying a Test Publisher's Approach to Measurement in a Reading Assessment System." The point of view taken is that of a producer of an educational service and product, in this case an instructional assessment system. Theoretical and practical considerations that entered into the design of the product are discussed. These include criterion and normative methods of score interpretation, provision for individualization of instruction and assessment, planning the recording, and processing of individual results so that they are conducive both to summative and formative evaluation of individuals and groups. The cooperative intereaction between the publisher and participating local agencies is noted.

Barrie Wellens, Harcourt Brace Jovanovich, Inc., will discuss "A Publisher's Implementation of Criterion Referenced Measurement in a Reading Assessment System." Information is provided as to how the publisher implemented the rationale and design of the Reading Assessment System discussed in the first presentation. This section is devoted to the delineation of specific steps involved in the development of the set of behavioral objectives, construction of items to measure them, and the production of the assessment system based upon the item pool. Decisions and steps in producing the separate components of the system are described together with the rationale for their use in this particular assessment system. Attention is given to the potential use of the system in other educational situations. Innovative aspects of this system are stressed.

Kenneth Carlson and George R. Zubulake, Wayne-Westland Community Schools, Michigan will discuss "Classroom Management of the HBJ Reading Assessment System," and "Uses of Assessment Materials for Instructional Purposes." The chief concern here is with the implementation and function of the Reading Assessment System as an on-going program in a particular educational situation. Reasons for participating in the pilot project are presented as well as a discussion of the classroom management of the system and the use of the assessment materials for instructional purposes. The pilot project is related to the larger issue of evaluation as a practical educational tool.

Richard C. Benjamin, Lansing School District, Michigan, will discuss "The Impact of Objective-Referenced Reading Assessment on Planning, Teaching and Evaluating in a Recently Desegregated Urban Setting." How the pilot program is used by school staff as part of a comprehensive program evaluation plan is discussed. The focus is on the relationship of the pilot assessment system to a comprehensive program evaluation plan and on the ability of the pilot program to meet the immediate and unique assessment needs generated in a recently desegregated school situation.

8.13 ALTERNATIVE EXPLANATIONS FOR INDIVIDUAL DIFFERENCES IN SOCIAL BEHAVIOR OF PRESCHOOLERS (E, SYMPOSIUM)

ROBERT P. BOGER, Michigan State University, Organizer

Several approaches to interpreting the etiology of social behavior will be considered. The four points of view to be presented are interpretations based on: (1) developmental patterns (i.e., age); (2) demographic factors (i.e., sex, race, socioeconomic class); (3) family influences (e.g., parental interaction patterns); and (4) intervention (e.g., educational programs). Data considering these four approaches were collected through a longitudinal study of preschool children. The sample was stratified with respect to sex, race and socioeconomic group. All the children were enrolled in a two year preschool program; some also participated in an experimental curriculum focusing on development of social skills. Data were collected continuously over a two year period for each group using two basic kinds of measurements—those focusing on the social-emotional behaviors of the child in various kinds of situations and those focusing on parent-child interactions. These measurements included both individual testing of the children and extensive observational ratings of the children and their parents using time-sampling procedures.

"Individual Differences in Social Behavior of Preschoolers as a Function of Age" is the topic of William H. Schmitt, Michigan State University. A great deal of the variability in social-emotional behavior of preschool children can be explained as a function of the child's age. A study of the maturational process was conducted using extensive observations of three- and four-year-old children's peer-group behavior. Data were recorded for each child over a two year period for different variables relevant to the socialization process (e.g., social involvement, verbalizations, physical interaction). Proportions of a child's time spent in varying forms of behavior at a given age were determined. Multivariate trend analyses were performed and logistic growth curves were fitted to the data. Definite patterns in social behavior emerged as a function of age. For example, amount of associative play increased over time, while solitary play decreased as a function of age. Similarly, amount of verbal interaction increased, while nonverbal interaction (particularly that which was negative) decreased. Initiations increased both in absolute amount and in relation to other types of interaction.

The second paper, "Individual Differences in Social Behavior of Preschoolers as a Function of Demographic Group" will be presented by Verda Scheifley, Michigan State University. Differences in social development between children are often explained in terms of differences in group membership based on sex, race, and social class. The demographic subgroup to which an individual belongs could account for part of the observed variability between preschoolers in their social development. Data for this study were obtained by time-sampled observations of children's behavior in a variety of situations as well as from individual measures such as the Cincinnati Autonomy Test Battery. For determination of differences between the various demographic variables, a multivariate analysis of variance was performed using a 2^3 factorial design (sex x race x social class). On certain variables (e.g., level of involvement), few differences were observed. On other variables, differences among demographic groups were noted. Lower-class children, for example, showed significantly more overt rejections than their middle-class peers, and physically aggressive behavior was found to be significantly greater for lower-class females than for middle-class females.

"Individual Differences in Social Behavior of Preschoolers as a Function of Parental Socializing Patterns" is the subject chosen by Jo Lynn Cunningham, Michigan State University. The family has traditionally been viewed as a primary socializing influence. The preschool years are a particularly critical period of time in this socialization process. In this study, parental behavior was viewed both as an independent and a dependent variable in relation to the behavior patterns of three- and four-year-old children along a variety of dimensions. Strong relationships were indicated between parental and child behaviors in areas of verbal communication, nonverbal communication, interaction process, and affective behavior. Both individual variables and sets of behaviors were compared, and consistent patterns were found for both. For example, highly verbal parents tended to have highly verbal children; parents whose behavior patterns were characterized as passive tended to have children whose behavior patterns were characterized as passive; and parents who demonstrated high levels of negative physical behavior tended to have children who demonstrated high levels of negative physical behavior.

The fourth paper of the symposium, "Individual Differences in

Social Behavior of Preschoolers as a Function of Educational Intervention," will be presented by Joanne Lechtenwalner, Michigan State University. The potential for changing human behavior is the basis of our educational system. New educational programs are developed with specific goals for behavioral change which may be contradictory to expectations based on such dimensions as age, demographic group, or family background. The present study investigated the effects of an experimental social skills curriculum. Implemented over a two year period in an ongoing preschool program, this curriculum involved exposure to a series of situations focusing on development of a varied behavioral repertoire and provision of appropriate models in a controlled setting. Multivariate analyses of variance were used for comparison of treatment groups as well as for changes during the course of the total preschool program. The magnitude of these changes exceeded the level which would be expected from maturation alone. In addition, children in the experimental program showed greater gains than those in the regular program on such dimensions as response variability, sharing, and level of social involvement.

8.15 CAREER DEVELOPMENT OF WOMEN (E)

Women: Personal and Environmental Factors in Role Identification and Career Choice

FELICE J. KARMAN, University of California, Los Angeles

The intent of the study was to discern what differential factors influence a woman's concept of the appropriate life style for her future. Using career aspirations as the differentiating factor, upper-class college women were defined as either traditionally or non-traditionally oriented, depending upon whether their career choices were in fields dominated by women or by men. Using the College Student Survey developed by the Higher Education Project of the Center for the Study of Evaluation at UCLA, data were examined pertaining to personality characteristics, attitudes, demographic factors and educational experiences. Differences were apparent on some variables within all these categories.

Some Structural Relationships within the Revised SVIB for Women

AUSTIN C. FRANK and BARBARA A. KIRK, University of California, Berkeley

Component scores for the Basic Interest Scales (BIS) and the Occupational scales of the revised Strong Vocational Interest Blank for Women (TW398) were separately developed and intercorrelated along with standardized composite scores representing each of the 11 Groups of Occupational scales on the profile. The dimensionality and structure of the BIS are not identical with those of the Occupational scales, although some similarities exist. Some profile Groups provide relatively good representations of BIS and/or Occupational scale components, but a range of high-level women's occupations seem poorly defined by the BIS and their components.

8.16 ASSESSMENT OF TEACHER EDUCATION AND RESEARCH EDUCATION PROGRAMS (H)

The Effect of a Field-Based Teacher Education Program upon Pupil Learning

JEROME C. HARSTE, Indiana University

The effect of a field-based teacher education program upon elementary school children's learning in a midwestern city was investigated. A pre- and posttest design controlling for the teacher, the school, and the ability of Ss was used. Forty children's test scores at the third and sixth grade levels were compared with children's test scores at those same grade levels four years later (Total N=320). Input of the field-based teacher education program resulted in a marked decrease in Ss learning as measured by the Iowa Test of Basic Skills at the third-grade level, urging caution to educators.

A Comparison of Subjective and Objective Methods of Teacher Evaluation

JAMES L. BURRY, ARLENE G. FINK, and STEPHEN P. KLEIN, Center for the Study of Evaluation, UCLA

Two methods of teacher evaluation, principals' ratings and student performance, were compared. Principals' ratings and student scores on state-mandated reading tests were collected from 26 elementary schools. Principals' ratings were quantified. The regression equation between pretest and posttest mean scores for each teacher's class was calculated and the extent to which each teacher's class fell above, at, or below the expected level of mean performance was computed. The correlation between principals' ratings and regression residuals for each teacher was analyzed to determine whether two different methods of teacher evaluation yield different results.

The Development of an Instructional Delivery System for External Studies in Higher Education

JOHN L. YEAGER, University of Pittsburgh

Recognition of that segment of the population to whom higher education is inaccessible is leading many universities to consider the potential of initiating non-resident study programs. The characteristics of the delivery system implemented to transmit the instruction are of primary consideration in the design of such programs, since these characteristics interact in delimiting student population, instructional methods, and program goals. This paper investigates the feasibility of various kinds of instructional delivery systems, with specific reference to the effectiveness of four different systems currently being pilot-tested at the University of Pittsburgh.

Identifying and Classifying Competencies for Performance-Based Teacher Training

JERRY L. BROWN and JAMES R. OKEY, Indiana University

Competency-based teacher training programs require clear statements of objectives, sequenced according to the needs and interests of learners and according to instructional considerations. A classification system used to generate teaching competencies for teachers of varying levels of skill and experience is discussed. The results of a study in which pre- and in-service teachers, principals, superintendents, and teacher trainers classified a set of competencies according to the time they should be learned in a teacher's career are reported. The study was designed to test the usefulness of the classification system and the competencies identified through its use.

8.17 LOCAL APPLICATIONS OF NATIONAL ASSESSMENT PRINCIPLES AND FINDINGS (H)

Some Implications of the National Assessment Model and Data for Local Education

LARRY E. CONAWAY, Eduation Commission of the States, National Assessment of Educational Progress

The National Assessment of Educational Progress is encouraging the interpretation of its data to make it more useful for local educators, and is facilitating the adaptation of NAEP procedures to state and local assessment programs. The Department of Utilization/Applications was formed in October 1971 to facilitate the use of technology developed and data produced by the commission. The implications of the NAEP model and data for local education are discussed.

Application of the National Assessment of Educational Progress Philosophy in San Bernardino City Schools

LEWIS A. BONNEY, Assistant Superintendent, Research & Development, San Bernardino City Unified School District

The strategy underlying a school district's effort to become more responsive to student needs has proven congruent with NAEP's thrust for an objectives based curriculum accompanied by criterion referenced assessment. The District's Board of Education identified eight broad goals of education, and a teacher task force established curriculum objectives for grades three, six, nine, and twelve in each goal area. NAEP consultants assisted teachers in constructing criterion referenced measures of the objectives. The NAEP matrix sampling model was used to sample student and test items. Student progress in each goal area was reported to lay and professional groups for setting instructional priorities.

Application of NAEP Writing Assessment Procedures in Montgomery County, Maryland

JAMES D. MORGAN, and M. ROBERTA KEITER, Montgomery County Public Schools

The Montgomery County Public School System in Maryland has initiated a demonstration project which administers the released writing exercises from the National Assessment of Educational Progress to a random sample of students aged 13 and 17. This project is unique in terms of the application of NAEP exercises in a local school district. The objectives of the project pertain to developing the capability of selecting a random and representative sample of students, the preparation of test booklets and manuals using criterion referenced tests, the training of examiners, the training of scorers, the development of data processing capability for these tests, and the preparation of reports for the professional staff and for the public.

8.18 EXPANDING EVALUATION CONCEPTS: APPLICATIONS AND REFLECTIONS (H)

Meta-Evaluation Applied: The Evaluation of a Large Scale Evaluation System

TIM L. WENTLING, University of Illinois;
JOHN A. KLIT, Illinois Division of Vocational and Technical Education

An evaluation of a state-wide evaluation system for occupational education was conducted to: 1) evaluate evaluation personnel, 2) evaluate procedures and instruments, and 3) evaluate impact of the evaluation system on LEA's. Questionnaires were administered to individuals involved in or affected by the evaluation system. A follow-up of local schools was made to determine impact in terms of change. Results were used to make revisions, identify evaluation personnel needing remediation, and assess the overall efficacy of the system.

The Synergistic Evaluation Model

MICHAEL G. HUNTER and DANIEL E. SCHOOLEY, Michigan Department of Education

The synergistic evaluation model separates an educational system into four domains: (1) policy, (2) program development, (3) instruction, and (4) feedback. Each of these domains contains both evaluative and nonevaluative activities which, when combined within domains and between domains, form the complete evaluation model. The model covers the activities of people from various groups involved in educational systems: (1) students, (2) instructional staff, (3) administrative staff, (4) educational specialists, (5) parents, and (6) other citizens.

Myths of Information Needs

DONALD P. ELY, Syracuse University

Myths concerning information, information needs, and information use are systematically examined. Seven myths are considered in a review of literature from curriculum development, policy research, evaluation, communication theory, and information science. Both advocate and adversary positions for each myth are presented. From this examination, an analytical framework is derived for responding to important curriculum and policy questions such as: 1) Who needs information? 2) What information is needed? 3) Where is the information available? 4) How can information be transmitted? 5) What does information do to people?

Self-Instructional Units on Evaluation and Research

JOHN W. WICK, and B. CLAUDE MATHIS, Northwestern University

This report describes the development and field testing of self-instructional units on evaluation and research. The rationale for the creation of the units involves the need to introduce the person untrained in statistics and measurement to a method of logic which can be used in decision-making relative to problems involving evaluation needs in education. The 11 units are presented, and problems associated with the project and the field test are discussed.

What You Always Felt You Should Know about PERT, But Were Afraid to Find Out

ANDREW R. WAGNER, Educational Testing Service

The uses of PERT are explained for the administrator, researcher, task force leader, and others interested in project development and management. A sophisticated knowledge of computers is not required. PERT is basically a manual process; the complexity of a project determines if computerization is feasible. An illustration shows how to initiate a PERT analysis and use the results in evaluating, reviewing, and monitoring the activities of an operational project. PERT is applicable for both large and small projects.

8.21 CONCEPTUAL BASES FOR VIDEO PLAYBACK IN TEACHER EDUCATION (C, SYMPOSIUM)

FRANCES F. FULLER, The University of Texas at Austin, Organizer

Showing teachers video tapes of their teaching is now a widespread practice, but the conceptual base for such playback is rarely explicit despite differing explanations of the process and effects observed. The purposes of the symposium are: to specify divergent conceptualizations of video playback which flow from distinct theoretical positions, to identify predictions of these divergent views, and to suggest critical experiments to test these hypotheses.

Each view will be illustrated by procedures consistent with that view. The four views and the procedure associated with each are:

behavior modification (microteaching); social psychological (attribution); experiential (interpersonal process recall); eclectic dynamic (self confrontation).

Don Ronchi, University of Chicago, will present a paper entitled "A Social Psychological View: Attribution Theory and Video Playback." Research in video playback typically has been conducted in the framework of one of two basic theoretical formulations, either traditional learning theory, incorporating the notion of feedback as reinforcement, or cognitive dissonance, as described by Festinger. Reinforcement theories subscribe to the law of effect. Dissonance theories follow something akin to a law of anti-effect. Behavior is perceived as dissonant from one's ideal only when it can be viewed as internally caused, i.e., not elicited by external forces. Reinforcement gives the individual a reason for his otherwise discrepant behavior and therefore should not evoke the negative drive state presumed required for dissonance reduction. The literature is reviewed to determine under what conditions reinforcement and dissonance models yield accurate predictions. Recent work on attribution theory, a viable alternative formulation, suggests unique predictions of effects of video playback. Ongoing work designed to test these predictions is discussed.

"An Experiential View of Video Playback: Interpersonal Process Recall" is to be presented by Norman I. Kagan, Michigan State University. The objective of Interpersonal Process Recall is to increase awareness, especially awareness of incongruities between what is perceived and felt on the one hand, and what the person had been willing or able to acknowledge on the other hand. It is assumed that affect is a body state which is internal as well as external, that affect is reflected in both awareness and physiological activity, and that individuals are able to use evidence of incongruity from sources such as video and physiological feedback.

Procedures include: videotaping a counseling session; a recall playback session with a second counselor (the inquirer) whose function is to facilitate the subject's self-analysis of his underlying thoughts and feelings, and generally to help the subject relive the original experience; simulation of affect through films engaging the viewer in intense rejection, pseudo acceptance, seductiveness, guilt or affection; videotaping subjects during recall and/or simulation sessions; and simultaneous observation by the person and the inquirer of the stimulus film, the subject's response to it, and a graphic visual representation of cardiac and sweat activity.

Frederick J. McDonald, Educational Testing Service, will speak on "A Behavior Modification View of Video Playback: Microteaching." Social learning theory is the theory that is applied through microteaching. The two critical sets of social learning variables mediated through microteaching are those associated with modeling and feedback. Microteaching is also a way of bringing specific teaching responses under experimental and behavioral control. Thus in each microteaching session, the learner emits teaching responses which are reinforced through videotape feedback or are elicited by viewing teaching behavior which is modeled in videotape presentation.

The purpose of research using microteaching which mediates these variables is to determine the optimum combination of modeling and feedback which strengthens specific categories of teaching responses. The research investigates the parameters of these variables which are most effective for eliciting desired teaching responses. Some interactions between type of response to be learned and type of treatment, modeling or feedback, have been found. Modeling has been found more effective than feedback when the modeling cues are highly discriminative. Feedback appears most effective with easily observed and reinforceable teaching behaviors.

"An Eclectic Dynamic View of Video Playback: Self Confrontation in a Personalized Teacher Education Program" is the topic of Frances F. Fuller, The University of Texas at Austin. A psychodynamic view posits that persistence of behavior change requires modification of a more or less permanent, spontaneous behavior potential which is partially outside the person's awareness and control. A review of the research and theoretical literature between 1960 and 1972 about video playback, and other kinds of self confrontation in education and psychology, suggests an eclectic dynamic view. Video playback seems a powerful placebo with potential for harm as well as help. The change process includes stress; intense focus of self; identification of discrepancies among experiencing, observation and goal; general activation of the system; increased realism; disruption of behavior; reassembly of behavior and changes in discrepancies. Interacting upon outcomes are characteristics of the subject, the performance, the feedback, the focus, the focuser, the feedback situation, the subsequent *in vivo* situation, and opportunities for elicitation, assembly and continued use of behaviors. Application requires a systems approach including various subject, treatment and context combinations for various outcomes. This system, Personalized Teacher Education, is described.

8.22 THE DEVELOPMENT AND IMPLEMENTATION OF AN EXPERIENCED BASED MODEL FOR TRAINING EVALUATION SPECIALISTS (H, SYMPOSIUM)

A Model for Graduate Education

ROBERT BARGAR, Ohio State University

A model for graduate education was designed which provides a comprehensive framework for (1) conceptualizing the parameters of a training program, (2) identifying and defining the operations of a training program, and (3) identifying and designing the procedures, policies, documents and instruments necessary in operating a training program. The model is based upon a systematic review of many of the problems now facing higher education and is designed to provide a basis for the amelioration of these problems. Although it is being implemented initially in the field of evaluation, the model is applicable to other fields.

A Review of Major Development and Implementation Activities

JACK SANDERS, Ohio State University

The following developments are reviewed as exemplars: (1) recruitment and selection procedures, including strategies for attracting candidates from specific target populations and criteria for selection; (b) the student handbook, which explicates admission policies and procedures; (3) the project resource data bank, which provides storage and retrieval of information concerning consortium agencies, students, instructional materials; (4) the adjunct professor handbook, which details the role of consortium agency representatives; (5) the universe of evaluation competencies, which provide a mechanism for generating student programs, for defining needed instructional development activities, and for matching students with appropriate internships and jobs; and (6) selected instructional packages.

9.01 ADOLESCENCE AND SOCIAL REFORM IN HISTORICAL PERSPECTIVE (F)

MICHAEL B. KATZ, Ontario Institute for Studies in Education

The three panelists will explore the significant intellectual and institutional factors which conditioned the education of the adolescent. Several viewpoints will be presented, employing various correlations between assumptions about child development and their translation into institutional forms. Demographic patterns will illuminate the varied stresses and effects of institutional impact. Comparative patterns of 19th and 20th century activities in this sphere of education will explore many other conditioning aspects of social structure and culture.

10.01 FACTORS RELATING TO CORRESPONDENCE AND OTHER NON-TRADITIONAL INSTRUCTION (C, SYMPOSIUM)

KIM L. SMART, United States Armed Forces Institute, Organizer

Emphasis on correspondence instruction, CAI (Computer Assisted Instruction), CMI (Computer Managed Instruction), and other forms of nontraditional instruction has prompted considerable research. Since the research is diverse, often incorporating data from a myriad of sources, a mutual exchange between researchers, theoreticians, and practitioners is desirable. The symposium will incorporate research conducted on nontraditional instruction, potentially relevant prose learning research, and means of assessing the effects of instructional techniques, as well as consideration of the practical import of the research.

"The Role of Readability" will be presented by George R. Klare, Ohio University. A major concern in correspondence instruction is getting students to complete courses. One of the variables that appears to affect the probability of course completion is "readability level." Readability is typically estimated by applying formulas which use counts of style elements to arrive at scores predictive of reader difficulty. Such scores are related to the comprehensibility of written material, the speed with which it can be read, and its acceptability.

In a recent study, the author analyzed 30 sets of USAFI course materials using an automated version of the Flesch "Reading Ease" readability formula. Subsequently, USAFI officials found a rank-order correlation of .87 between the scores and course completion data (holding length, a critical variable, constant). It appears that this relationship, as well as others involving instructional material, may be summarized in the following way:

Reader Ability —acting on→ Reader Motivation —acting on→ Readability Level of Material —produces→ Reader Performance

Lawrence T. Frase, Bell Laboratories, will speak on "Some Correspondence between Correspondence in the Laboratory and Instructional Contexts." The importance of correspondence instruction is sometimes underestimated. Surveys indicate that it is widely adopted, economical, and effective. It provides the primary source of instruction in some countries (e.g., the U.S.S.R.); its costs amount to about one-fifth the cost of resident instruction per student hour, and studies show that it teaches as well as or better than resident instruction.

Instruction through formal correspondence courses is a special case of learning from prose materials. Two major problem areas are discussed in this paper: first, how instructional materials might best be constructed (structure), and second, given a structured set of written materials, how study activities might be controlled through various adjunct aids (control). For both structure and control, the author cites laboratory results on learning from prose, and how those results provided inputs to the analysis and/or design of instructional correspondence.

In his "The Use of Test Data in Nontraditional Instruction," Robert L. Brennan of the State University of New York at Stony Brook comments that evaluators often fail to appreciate that data gathered from tests in nontraditional instruction is (and should be) used for several quite different evaluation purposes. This diversity of purposes often leads to confusion in the collection of meaningful data and the use of appropriate analytic techniques for analyzing such data. The use of two types of tests (criterion referenced and norm referenced tests), the collection of two types of data (conventional right-wrong data and confidence data), and the use of appropriate analytic techniques in the evaluation of (1) student performance, (2) instructional effectiveness, and (3) test items for nontraditional modes of teaching will be considered. The above topics will be considered in the context of a proposed taxonomy for the use of test data in instruction. Consideration will be given to the impact of computers in the collection, analysis, and use of test data in the instructional context.

"CALS (Computer Assisted Lessons) Research and Evaluation: An Interim Report" will be presented by Clay V. Brittain, United States Armed Forces Institute. A procedural variable, the use of computers to score the students' assignments, is being studied as it affects performance on correspondence courses. The format used is known as CALS–Computer Assisted Lesson Service. Courses were converted to an objective type lesson format which the student responded to using an electronically read answer sheet. The computer scored the lessons and printed comments to the student regarding the specific answer selected. Compared to the conventional course format, the CALS version positively affected lesson submissions, but had no effect on final examination scores. The effects of this procedure on completion rates have not, as of this time, been assessed. It is presumed that CALS will be a viable factor, particularly for identifiable subject matter area courses.

"Computer–Aided Authoring of Instructional Materials" is the topic of Lawrence M. Stolurow, SUNY at Stony Brook. Educational technology has formulated quality control procedures to be used in developing and evaluating instructional materials. These procedures require a computer for their reliable and efficient use. The problems and approaches to their solution will be discussed. Computer aids in the initial preparation of materials, in their formative evaluation and in research and summative evaluation, will be described. Initially development is aided by generators of which there are two types: code and substance. Both will be described. The problem of coherence involved in relating objectives, test items and instructional materials will be analyzed, and the types of software and the kinds of algorithms used will be illustrated. The general nature of the system architecture needed to develop and manage the processing of instructional materials for nontraditional applications will be described.

10.06 TEACHING AND STUDENT ACHIEVEMENT (C)

The Influence of Sex of Student and Sex of Teacher on Students' Achievement and Evaluation of the Teacher

CATHLEEN STASZ, SUSAN WEINBERG, and FREDERICK J. MCDONALD, Educational Testing Service

The relation between the congruence of sex of student and sex of teacher to the student's achievement and evaluation of the teacher has not been established satisfactorily. In a study of this relation, 24 English and social studies teachers were randomly assigned to classes composed of randomly assigned students. These teachers taught the same two week course in their subject. Students' achievement was measured; students also rated their teachers. An analysis of covariance with aptitude as covariate showed no interaction effect in English classes. There may be one for social studies classes, but it is confounded by a teacher-sex and aptitude interaction. The results for achievement and ratings were comparable.

The Relation of Student Achievement and Student Ratings of Teachers

DAVID POTTER, PAUL NALIN, and ANNE LEWANDOWSKI, Educational Testing Service

Two conflicting hypotheses are that students' ratings of teachers correlate with the students' achievement and that they do not. These hypotheses are difficult to test under ordinary classroom conditions. Twelve English and 12 social studies teachers were randomly assigned to classes to which 20 students had been randomly assigned. Each taught the same two-week course in his own subject area. Achievement

was measured at the end of the course; all students rated their teachers. No relation was found between achievement and ratings in English classes; a modest one was found in social studies classes.

Increasing Student Achievement by Teacher Incentive

RICHARD W. HISLOP, Bristol, Virginia School System,
JOSEPH C. JOHNSON II, University of Connecticut, and
Elaine A. Ploss, University of Virginia

This project utilized teacher incentive payments to increase student achievement gains in reading and to increase children's self-concepts and attitudes toward learning to read. Criterion referenced measures indicated students achieved maximum or near maximum mastery of IPO's. Numbers of objectives mastered and percentages of mastery increased. Norm reference measures indicated average achievement of at least expected gains and from 20 to 180 percent more in most cases. Affective measures demonstrated program students developed positive attitudes toward reading, instruction and testing, and task oriented work habits. These student achievements resulted in incentive bonus payments from $770 to $1,800.

Teachers' Attributions of Responsibility for Student Success and Failure Following Informational Feedback: A Field Verification

CAROLE AMES and RUSSELL AMES, Indiana University

The purpose of the study was to test the effects of motivational and informational factors on teachers' and observers' casual attributions for student success or failure in an instructional setting. Teachers taught a lesson to a group of children and received informational feedback about their teaching behavior. They were asked to account for either a student's success or failure by designating those factors which caused the student's performance. Observers, receiving the same information, responded to the same questionnaire. Support for a motivational hypothesis was not found; however, the study demonstrates a difference in the information processing between participants and observers.

Effects of Teachers' Cognitive Demand Styles on Pupil Learning

WILLIAM W. LYNCH, CAROLE AMES, CORINNE BARGER,
STEPHEN HILLMAN, and SUSAN WISEHART,
Indiana University

Two experiments were conducted to compare the effects of two different experimentally-induced orientations toward lesson objectives on teacher cognitive demands and pupil learning. In each experiment 36 student teachers were assigned to one of two teaching conditions. Each condition required the teacher to teach a lesson to a group of eight pupils. Both conditions used the same content but differed in that one group was oriented to teach for a recall objective, the other for concept mastery and transfer. Both experiments yielded differences between recall and concept conditions in teachers' cognitive demand styles and in pupil learning.

The Effect of Relevant Teaching Practice on the Elicitation of Student Achievement

WILLIAM B. MOODY and R. BARKER BAUSELL,
University of Delaware

Repeated failures to discriminate between trained experienced teachers and untrained inexperienced non-teachers give rise to the supposition that the behavior of teaching may be exempt from the principle that relevant practice in a task facilitates subsequent performance in that task. Two experiments were carried out to test this hypothesis. Experiment I demonstrated a teaching practice effect for inexperienced teachers. Experiment II replicated this finding while employing slightly more experienced teachers indicating that the effect may be attributable to familiarization and interaction with specific curriculum materials rather than solely a generalized "learning to teach" phenomenon specific to inexperienced teachers.

10.07 RECALL OF PROSE (C)

Learning and Recall of Adjective-Noun Phrases within Prose

JOHN W. OSBORNE, University of Alberta

Redintegrative theory was extrapolated to the learning and recall of adjective-noun (A-N) phrases within prose. Although noun components were recalled more often than were the adjectival components or the whole phrases, they did not have the redintegrative power of the adjectival components. The retrieval asymmetry found was in the opposite direction to that reported for free and paired-associate recall studies. Results did not support the extrapolation of redintegrative theory to cued recall within prose. The importance of adjectival components was attributed to their superiority to nouns in regard to cue function and susceptibility to learning.

Loss of Retrieval Information in Prose Recall

JEROME R. SEHULSTER, JOHN P. MCLAUGHLIN and
JAMES H. CROUSE, University of Delaware

Input orders and output orders of four stories assembled into a passage were systematically varied to study the primary effect in prose free recall. Recall was high for all first input stories regardless of output position and high for all first output stories regardless of input position. Recall for fourth input story was low with the interpolated recall of even one story. The results imply that proactive interference may affect the nature of retrieval cues in memory. In addition, output interference generated during the recall task may hinder recall. This interference seemed to affect recall of later input stories.

The Effect of Subjective Organization on the Recall of Prose

BRUCE R. DUNN, University of West Florida

Equal numbers of males and females read prose passages and then organized concepts taken from them using a Mandler sorting task. Number of categories used in sorting affected recall only with female subjects. Both sexes took significantly more time in sorting into increased categories, but did not differ in the amount of time taken, thus suggesting that the effect of categories on recall is sex-limited. No evidence of clustering of sorting categories during recall was found. These results suggest that more complex forms of subjective organization need to be identified to test its effects on the recall of prose.

Is Organization of Prose Materials Related to Amount of Recall?

GERALD R. KISSLER and KENNETH E. LLOYD, Washington
State University

Previous studies have often found no relationship between organization of prose materials and amount of recall. The present study found a modest correlation ($r = .32$) between physical reorganization of scrambled sentences and a short answer essay test. It was easier to organize the related sentences, and recall was also significantly higher ($p < .01$). Organization X Trials was found to be the best predictor of amount of recall, which was interpreted as an interaction between organization and acquisition. Recall was higher with well-organized

materials, but recall increased with successive presentations even when organization was held constant.

The Effects of Prose Organization and Individual Differences on Free Recall

THOMAS G. JAMES and BOBBY R. BROWN,
Florida State University

Passages organized by concept names, concept attributes and by randomization were presented to students for study and recall, and measures of verbal comprehension, verbal creativity, associative memory, closure, and subjective organization were taken. The name group recalled more correct statements than the other groups; clustering by names was predominant for all groups, and unique patterns of correlations were obtained among cognitive factors and recall scores for each group. These results indicate that a highly organized passage and the use of a preferred recall strategy yield superior recall, and that cognitive factors need to be considered in the design of instruction.

10.08 EDUCATION OF THE GIFTED (C)

Educational Facilitation for Mathematically and Scientifically Precocious Youth

LYNN H. FOX and JULIAN C. STANLEY,
The Johns Hopkins University

This report is on the articulation of individualized educational programs for mathematically and scientifically talented youth. Emphasis is on exploring alternatives to regular high school matriculation for junior high students with mathematical aptitude, interest, and manifest achievement. Consideration is given to the use of college level tests in the educational planning process. The importance of individual differences, such as sex, is explored. The impact of generalized approaches for the enhancing of educational experience to improve the cognitive and social-emotional development of these students is discussed. Implications for future research and flexible educational planning for the gifted are presented.

The Three Year B.A.–Who Will Choose It? Who Will Benefit?

JOAN S. STARK, Goucher College

Characteristics of students at a women's liberal arts college who have selected an entirely optional three year degree program are compared with characteristics of students in the same college class who rejected the acceleration option. The report focuses on traditional academic predictors, socio-economic background, attitudes toward acceleration and towards the college climate, as well as on academic achievement in college. Information about students who choose to accelerate their education and who benefit from the decision has important implications for counseling and curricular change in view of current widespread emphasis on the Carnegie Commission recommendation for a time-compressed B.A.

Discovering Quantitative Precocity

DANIEL P. KEATING and JULIAN C. STANLEY,
The Johns Hopkins University

In order to discover those few students who are operating at an exceptionally high level of ability in mathematics and quantitative sciences early in their academic careers (sixth through eighth grades), it is necessary to use higher level tests than are normally administered in school testing programs. Tests at age-in-grade level are not usually appropriate because of their lack of ceiling for these students. The results of testing large numbers of gifted students with appropriately difficult tests on several occasions are reported. The importance and implications of adequate testing for identifying the gifted and facilitating their educational development are discussed.

10.09 READING: III (C)

Experimental Research in Reading–Some Considerations in Regard to Design

JACQUELIN STITT and J. JAAP TUINMAN,
Indiana University

Many experimental studies in reading involve manipulation of texts, either in form or in content. Frequently the effect of this manipulation is assessed by asking comprehension questions. The relationship among alternate texts and among texts and questions is often ambiguous. This paper deals with a systematic analysis of relationships between independent and dependent variables in this type of study. A system for generating variable arrays is proposed which allows anticipation of difficulties in experimental designs requesting identical operationalization of the dependent variable in the face of non-identical questions and/or passages.

Making Decisions on the Passage Dependency of Reading Comprehension Items–Some Useful Statistics

J. JAAP TUINMAN and MARY E. HALPIN,
Indiana University

A great number of items on standardized reading comprehension tests can be answered without prior reading of the passages upon which the items are based. This tends to invalidate such items. The proportion of correct responses to an item without the passage present is often used as that item's passage dependency index. It is shown that this index is ambiguous. Additional statistics are proposed which are derivable from routine item analysis data. Application of these statistics to data for 5 widely used reading tests based on 1800 respondents to each test, is discussed.

Dialect in Relation to Reading Achievement

MARILYN S. LUCAS and HARRY SINGER,
University of California, Riverside

Significant relationships found between language background, ITPA, and oral reading performance in 60 Mexican-American children in grades one to three suggest that: (1) the nature of the relationships change with age, and (2) bilingual background becomes more involved as syntactical and meaning complexity of the reading task increases. The data tend to support Chomsky's position in three theoretical viewpoints of the relationship between dialect and reading achievement.

Phonological and Semantic Components of Words in Beginning Reading

JANA M. LUCAS, Stanford University

A stage processing model of beginning reading was postulated to consist of three independent stages: visual coding, acoustic coding, and comprehension. Support for the model was obtained by testing the independence of word components and prefamiliarization procedures. An analysis of variance revealed comprehension to be significantly affected by semantic components of words (word familiarity and concreteness) and by a meaning-related prefamiliarization. Visual and acoustic coding were affected by phonological components of words (the number of vowels and regularity of vowel pronunciation) and by a

word rehearsal prefamiliarization. An analysis of pronunciation errors indicated that visual coding is affected by letter cluster familiarity.

A Comparison of the Word Recognition Processes of Beginning and Experienced Readers

EILEEN C. ROBINSON and WILLIAM B. GILLOOLY,
Rutgers University

Past research has presented conflicting views on the word recognition processes of beginning versus experienced readers. This incongruity was investigated by comparing the performance of these two groups on the same word recognition task. A three-factor, repeated measures design was employed to study the responses of first- and eighth-graders as they searched for words in two different print configurations—normal and mixed-case. Subjects at both grade levels circled significantly fewer words in the mixed-case configuration. The results were interpreted as supporting the theory that beginning readers use the same feature scanning process as do experienced readers.

10.10 THE NATIONAL LONGITUDINAL STUDY OF THE HIGH SCHOOL CLASS OF 1972 (E, SYMPOSIUM)

HENRY S. DYER, Educational Testing Service, Chairman

A summary of the experiences of the U.S. Office of Education and the Educational Testing Service in conducting a national longitudinal study of the high school class of 1972 will be presented. The study provides statistics of the experiences of a national sample of students as they move out of the American high school system. Information is being gathered on the post-secondary activities of high school graduates as they enter the labor force, go to college, join the armed forces, get married, go to a vocational school, or are unemployed. The Study was undertaken in January of 1972 and is expected to continue until 1978 or 1980.

10.15 THE ETHNIC VARIABLE IN COUNSELING: THREE EXPERIMENTAL STUDIES (E, SYMPOSIUM)

RAY E. HOSFORD, University of California, Santa Barbara, Chairman

Three experimental studies which were designed to test behavioral counseling procedures with Mexican-American subjects are described. The studies were implemented in field settings with three different age levels: elementary, junior high and adult. Three different criterion variables were promoted. These included increasing reading behaviors, learning decisionmaking skills and improving marital and family relationships. The specific experimental treatments employed were culturally appropriate reinforcement menus, videotaped Anglo and Mexican-American social models, and behavior rehearsal—therapeutic listening respectively.

The symposium has both scientific and educational implications. The findings add to knowledge in the area of reinforcement and social learning theories by investigating a little researched variable in learning—ethnic characteristics. The fact that the studies took place in actual field settings and promoted desired educational and social outcomes increases their significance to both researchers and practitioners.

Stephen Bowles of the University of California in Santa Barbara will present a paper entitled "The Ethnic Variable as a Factor in Reinforcement." The subjects tested were 136 fourth-, fifth- and sixth-grade students enrolled in reading classes during a five week summer school. The experimental treatment was exposure to a reinforcement menu containing 17 different reinforcers. Reinforcement was contingent upon: (1) specific reading behaviors during reading period, or (2) reading a book. The experimental group demonstrated a significant increase in the percentage of students engaged in reading behaviors during free choice class time over three observation periods. Non-Spanish and female experimental group subjects and the total experimental group read significantly more books during the treatment period. Spanish surname experimental group subjects and the total experimental group displayed significantly better summer school attendance. Culturally appropriate reinforcers for Spanish surname subjects were not identified at a critical level of significance. However, the potential for developing such reinforcers did evidence itself for those few students who chose these specifically oriented reinforcers.

"The Ethnic Variable as a Factor in Social Modeling," presented by Louis A. J. M. de Visser of Loyola University of Los Angeles, investigated the relative effects of ethnic characteristics (Anglo and Mexican-American) of social models, counselors and students on the acquisition and performance of modeled behaviors. All social models, counselors and subjects participating in the study were males. The subjects were eighth-grade students who had volunteered to receive special counseling. The experimental treatment consisted of three consecutive counseling sessions during which video-tapes relative to decision-making were presented and discussed. Evaluation procedures included questionnaires to assess recall, and interviews to assess performance of the modeled behaviors. Anglo and Mexican-American social models and counselors were equally effective in promoting imitative behaviors. Anglo subjects engaged in a greater performance of the criterion behaviors than did Mexican-American subjects, but no differences for recall were found. The interaction of ethnic characteristics did not significantly affect the extent of the criterion behaviors.

"Counseling Low Socioeconomic Mexican-American Women," the subject of a paper by Teresa Ramirez Boulette, Santa Barbara County Mental Health Services, tested experimentally the therapeutic effectiveness of two counseling strategies, Therapeutic Listening and Behavior Rehearsal, with low income Mexican American women. Attainment of five client specific goals as measured by the Goal Attainment Scale was defined as therapeutic effectiveness. Attendance in therapy was used as an additional dependent variable. The following hypotheses were tested: (1) Exposure to Behavior Rehearsal would effect more favorable therapeutic outcomes in terms of client-specific goals and more frequent attendance at treatment; (2) Treatment attendance would be positively correlated to therapeutic outcomes; (3) Spanish would be more frequently preferred in counseling than English.

The study also sought answers to five research questions concerned with: (1) the client's ethnic, socioeconomic and personal characteristics; (2) problem areas presented at the intake interview; (3) problem areas discussed during counseling; (4) the client's referral source, and (5) the utilization of available transportation and baby-sitting services.

The results of the study showed that Behavioral Rehearsal treatment procedures produced statistically significant differences in promoting more favorable therapeutic outcomes on one area of the five GAS scales. Considerable demographic data were obtained in answer to the five research questions. These data were used to define more accurately the characteristics of this ethnic group.

10.16 MATRIX SAMPLING METHODOLOGY (D and NCME)

A Note on Allocating Items to Subtests in Multiple Matrix Sampling

DAVID M. SHOEMAKER, Southwest Regional Laboratory for Educational Research and Development

Investigated empirically through post mortem item-examinee sampling were the relative merits of two alternative procedures for allocating items to subtests in multiple matrix sampling and the

feasibility of using the jackknife in approximating standard errors of estimate. The results indicate clearly that a partially balanced incomplete block design is preferable to random sampling in allocating items to subtests. The jackknife was found to better approximate standard errors of estimate in the latter item allocation procedure than in the former. These and other results are discussed in detail.

Item-Examinee Sampling: Optimum Number of Items and Examinees

MABEL LAI YING MOY and ROBERT S. BARCIKOWSKI, Ohio University

Using a computer-based Monte Carlo approach to generate item responses, the results of this study indicate that, when item discrimination indices are considered, item-examinee sampling procedures having the same number of observations have different standard errors in estimating both test mean and test variance. With certain types of tests, a single item-examinee sampling plan would not yield optimal, i.e., smallest standard error, estimates of both μ and σ^2. That is, one sampling plan would be needed to optimally estimate μ and another to optimally estimate σ^2. In addition, it was found that single exhaustion of the item set was sufficient for estimating both μ and σ^2.

The Matrix Test Analysis Program: A Measurement Heuristic

RICHARD W. DAVIS, Indiana University and
WILLIAM E. LOADMAN, Ohio State University

A subject by item matrix of test responses is shown to be a useful heuristic in criterion referenced and norm referenced test analysis, and in the teaching of measurement. The pattern of responses within the matrix provides indications of item interactions, weak deceptors, and conventional test statistics. The strong visual analogy between the matrix and test parameters makes the matrix a useful teaching aid and analytical tool.

Approximating Standardized Achievement Test Norms With a Theoretical Model

DALE C. BRANDENBURG, University of Illinois and
ROBERT A. FORSYTH, University of Iowa

This study was undertaken to answer the following research question: Can standardized achievement test norms be better estimated with a theoretical probability model other than the negative hypergeometric model? Ninety norms distributions from two standardized achievement test batteries (ITBS and ITED) were fitted by six models. The results strongly supported the Pearson Type I model (four moments) as the best-fitting curve. It was concluded that this Type I model could provide a viable alternative to the negative hypergeometric model for use in approximating distributions when moment estimates are obtained from multiple matrix sampling or item sampling procedures.

Further Studies of Linear Prediction Following Matrix Sampling

DAVID J. KLEINKE, Syracuse University

In a post mortem study, it is demonstrated that linear prediction is as effective as computing a negative hypergeometric distribution for estimating test norms following matrix sampling from a total test with a highly skewed score distribution, provided the same prediction coefficient is used for all examinee groups. It is also demonstrated empirically and algebraically that using a coefficient unique to each examinee group produces distributions of predicted total-test scores with "insufficient" variance. Implications for measurement practice and statistical theory are discussed.

10.17 MODELS OF BIAS FOR USING TESTS IN (D, SYMPOSIUM)

GARY R. HANSON, American College Testing Program, Chairman

"Is Culture-Fairness Objective or Subjective?" will be discussed by Richard B. Darlington, Cornell University. The search for a satisfactory objective definition of a culture-fair test is doomed to failure, except in the special case in which different cultural groups have the same mean scores on the criterion variable to be predicted by the test. In the general case, it can be shown that no test (except one with the rare quality of perfect validity) can meet all the criteria reasonably expected of a "culture fair" test. The search for an objective definition of culture-fairness must therefore be replaced by a subjective judgment of the degree of validity a tester is willing to sacrifice in order to select more or fewer members of certain cultural groups.

Robert L. Linn, Educational Testing Service, will discuss "Fair Test Use in Selection." The implications of basing predictions for minority group members on regression equations derived for majority group members are considered in terms of (1) systematic over- or under-prediction for minority group members, and (2) the proportions of minority group students who are predicted to achieve among the top 25%, 50, or 75% of the study sample in comparison to the proportions actually doing so. Data from three previous studies in which SAT scores were used to predict freshmen grades for white students and black students at a total of 22 institutions are used for three analyses. Systematic errors of prediction when predictions for women are based on regression equations derived for men are also reported using data from ten colleges. Darlington's (1971) recent proposal that the criterion variable be adjusted for cultural background is reviewed and the implications of this proposal for test construction are considered.

Nancy S. Cole, The American College Testing Program, will discuss "A Model for Fairness in Selection." Several models of test bias, or its converse fairness, examine bias from the point of view of the selecting institution for which the greatest concern is selecting people who will be successful. Under these models fairness is defined as selecting students with comparable chances of success or some similar definition. However, when fairness is examined from the applicant's point of view a different definition emerges. To the applicant, fairness may require the guarantee of equal opportunity of selection for groups of potentially successful applicants regardless of group membership based on race, sex, or other characteristics. A model using this definition of fairness is presented and its implications and possible applications are discussed.

Lloyd G. Humphreys, University of Illinois, will discuss "Fairness in Test Use with Individuals and Fairness in Selection." It is important to distinguish between the fairness of a test for individuals and the fairness of a selection program based on use of a test. It must be acknowledged at the outset that no statistical definition of fairness will ever be accepted as completely satisfactory for either of the two ways described above in which fairness of a test is used. With respect to the fairness of a test in use with individuals, the following definition is suggested: Fairness requires that the standard error of estimate be made as small as possible and that the expected score of the individual be unbiased. With respect to the fairness of a selection program based on use of a test or tests, the social costs of making errors of the two types should be balanced against each other for each selection program and perhaps for different groups demographically defined as well.

10.20 MEASUREMENT OF CREATIVITY (D and NCME)

Development of Provisional Criteria for the Study of Scientific Creativity

NORMAN FREDERIKSEN, FRANKLIN R. EVANS, and WILLIAM C. WARD, Educational Testing Service

A test of one aspect of scientific creativity, the ability to formulate hypotheses to account for research findings, was given to 400 college students, along with ability and personality measures. Scores for quantity and quality of hypotheses were reliable and showed evidence of construct validity. Both quantity and quality feedback had their major effect on the quantity of ideas. Development of measures of other aspects of the research enterprise is underway, intended to lead to a set of criterion measures to be used in basic studies of scientific creativity and potentially in the selection and training of creative scientists.

Effects of Training on Rating Reliability as Estimated by Anova Procedures, for Fluency Tests of Creativity

CYNTHIA L. WILLIAMS, University of Pittsburgh

Each test in the Divergent Production battery requires the examinee to produce a response. Since these responses must be evaluated, the factor of rater judgment influences the reliability of scores. The problem of scoring reliability is one which pervades the literature on creativity research, where either low estimates or no estimates have been reported when tests from the battery are used. The purpose of this study was to develop a training program for raters of some Divergent Production fluency factor tests and to evaluate this program. An experimental design was generated for the evaluation and the scoring reliability was estimated through analysis of variance procedures. General principles for training raters and for analyzing the results of the design will be discussed.

Multivariate Analysis of the Relationship Between IQ and Creativity

JOHN FOLLMAN, EDWARD UPRICHARD, University of South Florida
WAYNE MALONE and RICHARD COOP, Pasco Comprehensive High School

The objective of this study was to conduct an intensive investigation of the relationship between Lorge Thorndike IQ subtest and Torrance creativity subtest scores. Ss were 154 twelfth graders. First order partial correlations were about .50 between different sets of creativity subtests with different IQ subtests partialled out. Canonical correlations between sets of creativity subtests vis a vis sets of IQ subtests were about .40. Multiple regression analyses indicated that different individual IQ subtests accounted for small amounts of creativity subtests' variance and combinations of IQ subtests accounted for larger but still small amounts of creativity subtests' variance.

Teacher Behavior Related to Pupil Creativity and Assessment Stratagem

THOMAS J. ROOKEY, Research for Better Schools, Inc.
FRANCIS J. REARDON, Pa. Dept. of Education

In this study, the evaluation of pupil creativity was partitioned into affective and cognitive components while teacher behavior was divided into classroom practices and teacher attitude. Nine hundred, forty-five fifth grade pupils from a small city district were studied for one year.

The teacher attitude measure did not relate to creative ability and only unidirectionally to creative attitude. The teacher's classroom practices related to creative ability but not creative attitude.

The interrelationships suggest the multidimensional nature of creativity assessment in the classroom setting.

13.01 RESEARCH IN COUNSELING: FUTURE DIRECTIONS (E, EXPERIMENTAL SYMPOSIUM)

N. KENNETH LAFLEUR, University of Virginia, Chairman

The focus of the symposium will be the stimulation of counseling research. A conversational format and small group discussion will be utilized to achieve the symposium objectives. The objectives are: (1) to present varied positions regarding the directions for research in counseling, (2) to provide opportunities for audience interaction with leading counseling researchers in a small group setting, and (3) to stimulate counseling research in the directions proposed.

The members of the symposium panel are Richard Dustin of the University of Iowa, John D. Krumboltz of Stanford University, Norman Sprinthall of the University of Minnesota, and Carl E. Thoresen of Stanford University. N. Kenneth LaFleur of the University of Virginia will serve as the panel chairman and discussion leader.

The panel members will not present papers but rather present their views regarding counseling research directions, and interact with each other in a conversational format during the first portion of the meeting. The final portion of the symposium will be devoted to small audience group discussions led by the individual panel members. The small groups will focus on generating research projects in the direction proposed by the specific panel member group leader.

13.06 HOMOSEXUALITY: OUT OF THE EDUCATIONAL CLOSET (E, SYMPOSIUM)

WALTER M. MATHEWS, University of Mississippi, Chairman

The treatment that educators have generally given to homosexuality reflects an unfortunate potpourri of prejudice and misinformation that is shared by a great portion of the public. Recently, there have been glimmers of enlightenment in educational circles. The purpose of this symposium is to reflect some of the progress that is being made in education in accepting gay men and women, to point to some of the places where much more change is needed, and to describe the role that educators can play if they are truly concerned with all their students.

In the background paper of the symposium, "Homosexuality: An Educational Confrontation," Walter M. Mathews of the University of Mississippi will discuss the traditional approaches taken by educators toward homosexuality and the dilemma of sorting the gays from the straights.

Barbara Gittings, who is the Coordinator of the Task Force for Gay Liberation of the American Library Association, will present a paper entitled: "Gay Lib in the Library." She will discuss the leadership that the American Library Association has asserted in their educational battle for the sake of gay people and gay rights. Ms. Gittings will discuss the problems created with both gay and straight readers of the traditional holdings concerning homosexuality that libraries have, and the need for readily available materials that treat homosexuality as a healthy and valid lifestyle.

Warren Blumenfeld is a Co-Coordinator of the National Gay Student Center, a clearinghouse that is acting as a research and innovation center for gay student groups and individuals. He will present the results of the research into the psycho/social needs of gay students, and discuss the ways in which the educational institutions of this country should be dealing with these needs. Ways in which teachers may be educated and sensitized to the special needs of gay students will be described. Mr. Blumenfeld will also discuss the scope of the Gay Student Movement. The title of his paper is "Homosexual Needs and Educational Responses."

Ralph Blair, the Director of the Homosexual Community Counseling Center, in New York City, will present the findings and conclusions of his study of the current and potential student personnel provisions which meet criteria of ethnographic knowledge bases, the professional commitments of counselors, and the pragmatics of college operations in addressing the special needs of homosexually interested students. The study included the deans of students and directors of counseling at 95% of the American universities which have over 10,000 students, as well as 210 self-acknowledged homosexual students from 81 colleges and universities. The title of this paper is "Counseling and Student Personnel Services for Homosexually Interested College Students."

James Toy, one of two Program Assistants for Homosexuality at the University of Michigan, will present a paper entitled "Homosexuals and Universities." He will discuss the homosexuality program that he and his female colleague have developed at the University of Michigan.

The educational importance of this symposium lies in the fact that it openly considers an issue which has previously been ignored by most professional organizations. Social attitudes toward homosexuality have become more open, accepting, and free of stereotypical notions. It is appropriate that educators at least keep pace with the change—even if they choose not to support it.

13.07 ENVIRONMENTAL STRESS AND EDUCATIONAL RESPONSE (A, SYMPOSIUM)

HOWARD E. WAKEFIELD, UW–MSN, Organizer

There are two objectives of the symposium. The first objective is to draw together from three fields of scholarship evidence about the link between individual work productivity in education and environmental stress, specifically, between the intensity of environmental stress and a depressed rate of educational progress. The second objective is to call to the attention of the education profession the present state of this important, yet little known or appreciated, field of inquiry.

Four presentations will be made. The first presentation will be made by William Loring of the National Institutes of Health, and is entitled "The Medical Evidence." Medical findings about physiologic adaptation to environmental stress will be reviewed. Children are leaving elementary school with physical defects that have been caused by the classroom environment and that were preventable. The second presentation will be made by Byron Bloomfield, Department of Environmental Design, UW–MSN. The title is "The Role of Architectural Design." The design profession is restricted in its application of the medical findings by the attitudes of clients, both lay and professional. The third presentation, by Howard E. Wakefield, Department of Educational Administration, UW–MSN, is entitled "The Influence of Educational Thought and Practice on the Classroom Environment." The working conditions imposed on learners stem from managerial matters rather than from a concern for the health of pupils. The fourth presentation will be made by William Wilkerson, Department of Administration and Supervision, Indiana University. The title is "Cost-Benefit and Educational Environments." Costs of the disabilities far outstrip the costs of adequately designed and controlled educational environments.

This symposium has scientific and educational importance. There has been wide acceptance of the idea that hunger interferes with learning; however, an environment which insidiously and swiftly exhausts the precious energy store of a learner is attracting an insufficient amount of scientific attention. This subject touches fields of scholarship which are not normally in close communication with each other, e.g., child development, physiology, architectural design, and educational administration. Conditions are not being corrected in new facilities; awareness must, therefore, be increased. Educational administration should take the initiative and ask medical and design people to join forces to move into this "no man's land" of scientific inquiry.

13.08 COOPERATIVE ACCOUNTABILITY PROJECT FOR STATE AND LOCAL EDUCATIONAL AGENCIES (A, SYMPOSIUM)

MICHAEL GRADY, Colorado, Department of Education, Organizer

The Cooperative Accountability Project for SEA-LEA's is a three year undertaking funded under Title V of the Elementary and Secondary Education Act of 1965. The project is designed to assist in changing the nature of SEA-LEA roles as more state accountability statutes are enacted. There are presently eight SEAs participating in the project: Maryland, Florida, Oregon, Minnesota, Pennsylvania, Michigan, Wisconsin and Colorado. Colorado is the state charged with administering the project.

Over the next three years five documents will be produced: (1) Legislative Mandates (to be completed by the Wisconsin SEA), (2) Criterion Standards for Accountability, (3) Accountability Models Identification, (4) SEA-LEA Role Expectations, and (5) Reporting Practices and Procedures. It is the objective of this symposium to share the present accountability thrust of the participating SEA's with reference to the five documents of the project, and through meaningful interaction with a national cross-section of researchers to modify this thrust, as appropriate.

"The Challenge of Accountability for Effective SEA Administration" will be presented by Donald D. Woodington of the Colorado Department of Education. Historically, the State Education Agency (SEA) has had a non-evaluative role in education. Decisions about the education process have been left to the local education agency (LEA), the SEA serving in consultative and leadership roles except for a secondary function in evaluation dealing with school accreditation. The SEA's and LEA's in Colorado and other states are now faced with a changing situation. Legislation has been enacted in at least 17 states which requires state-wide evaluation of public school programs. This legislation emphasizes evaluation of student performance in contrast to the prior emphasis on provisions and processes. Both SEA and LEA roles will change dramatically in the near future. SEA's must develop methods for collecting, analyzing and reporting LEA data on student performance and quality education to the publics served by the SEA and LEA. The LEA's must organize their educational programs so that the process and product evaluation, as well as cost analysis, can be performed.

Arthur R. Olson, Colorado Department of Education, will present a paper entitled "An Overview of the Cooperative Accountability Project." The following five documents will be produced over the next three years, and will serve to assist LEA's and SEA's in performing their duties more effectively: (1) *Legislative Mandates of Accountability* (Wisconsin Department of Education). This document will represent an analysis of existing constitutional and legislative mandates and the legal and administrative policies of states boards as they impact upon accountability legislation. (2) *Criterion Standards.* The entire array of federal, state and local criterion standards will be analyzed and a paradigm suggested as optimal for each level of concern. (3) *Models Identification.* The elements, sequence, practices, resources, and methods needed for an accountability model will be identified from an analysis of needs procedures. (4) *Role Expectations.* The various roles of participants in the accountability system will be reviewed in perspective. (5) *Reporting Practices and Procedures.* The content and form of reporting accountability data will be discussed in terms of the public's needs for the specific data.

"The Legislative Mandates Contained in Various State Education Accountability Statutes" is the topic chosen by Archie A. Buchmiller, Wisconsin Department of Education. The research for this document has included a comparison of individual state accountability laws, and

their legislative mandates for SEA and LEA implementation. The report includes information on: increased state aid to education resulting from recent court decisions, the governance of education at the state and local level, and goal objective setting in legislative and executive groups. Draft legislation, sample acts, guidelines for implementing accountability legislation, and a complete bibliography have also been included. The document has been structured around the following rubrics: Current Status of Legislative and State Boards Mandates; Legislative Provisions; Basic Elements of Legislative Control; Implementation Criteria; and a Source of Information about Educational Accountability.

Michael J. Grady, Jr., Colorado Department of Education, will present a paper entitled "An Evaluation of Accountability Programs in Colorado. Public Education in Colorado is serving as a demonstration project for the Cooperative Accountability Project, as well as for its own accountability statute. An analysis of accountability progress resulting from data gathered from the second annual accountability report is discussed and summarized. Current Colorado Department of Education programs, such as the School Improvement Process teams, are described as they impact upon accountability in Cclorado. Proposed SEA programs designed to assist the LEA implementation of accountability are highlighted in terms of the specific SEA-LEA needs which they satisfy. The analysis of accountability programs in Colorado also identifies the performance and process objectives found by LEA's to be most promising, as well as those whose assessment has been determined to be unsuccessful or not cost effective.

13.09 THE SYSTEMATIC DESIGN OF EDUCATIONAL RESEARCH TRAINING (D, SYMPOSIUM)

RICHARD C. BOUTWELL, Bucknell University, Organizer

The symposium will discuss departmental recruitment and employment placement of researchers, coursework essentials in research and evaluation, apprenticeship experience related to subsequent productivity, repackaging the educational dissertation for improved doctoral training and knowledge dissemination, and inservice training: the role of professional associations in upgrading research competencies. One of the outcomes from this symposium and discussion hopefully will be the breakup of the tradition-bound and oftentimes nonempirical bases candidate training decision processes, which have very little payoff for the field of educational research.

"Departmental Recruitment and Employment Placement of Researchers: Background Characteristics Associated with Scientific Careers," M. David Merrill, Brigham Young University. The recruitment of researchers is usually not a well-defined activity for most psychology or education departments because admittance into a program depends on a number of related candidate attributes. There is no simple formula for deciding who is or who is not going to be accepted for a doctoral program in research. Because of university related topics such as increasingly greater faculty time per candidate, and growing financial burdens for the department per candidate, the selection committee usually work many hours over a prospective candidate's application in order to accept only candidates with high predictive success in the profession. There are some candidate characteristics which correlate quite highly with future success in both the negative and positive directions. Anderson, Spotich, Rogers, and Worthen (1971) have identified 226 of these task characteristics related to research.

"Coursework Essentials in Research and Evaluation: A Task Analysis of Competencies Required in Agencies Conducting Outstanding Research and Evaluation Activities," Blaine R. Worthen, University of Colorado. Conclusions concerning the competencies, skills, and knowledge which appear to be involved in conducting outstanding research and evaluation activities in educational and psychological settings are listed. The conclusions were derived from two separate types of activities carried out by the author in conjunction with other researchers: (1) a rational analysis, and (2) an empirical analysis. Some of the conclusions of these analyses were as follows: (1) there is too much to communicate to trainees for the time normally spent in a graduate program; (2) existing graduate programs do not train students in many of the skills listed as essential; (3) existing graduate programs need to be upgraded to cover the essentials, or alternative strategies, such as apprenticeship programs for training competent researchers, short-term training and retraining procedures, institutes, and self-contained, exportable, programmed materials, need to be developed. Recommendations concerning these implications will be made.

"Apprenticeship Experience Related to Subsequent Research Productivity," Arliss Roaden, Ohio State University. This two phase study tested the relationship between research training and postgraduate productivity. Productivity is defined as the average number of papers published on research, and/or the amount of monies received from sources outside the university. The first phase of the study used a group of 4,000 members of the American Education Research Association (AERA), who were divided according to whether they had or had not been a research assistant. The results indicated those who had been research assistants were two and one-half times as productive as those who had not. The second phase, which analyzed the research assistants according to their assigned duties, showed a high positive correlation between productivity and conducting of research as a graduate student.

"The Role of the Professional Association in Maintaining and Upgrading Research Competencies," John E. Hopkins, Indiana University. The results of a survey of the training offered by professional associations conducted by and for the Task Force on Training of the American Educational Research Association are reviewed. Some professional associations are providing effective in-service opportunities for their members, but there is no single prescription for doing so. Each association had to develop a comprehensive description of the needs of its members. Once the perimeters of need were established, the association had to tailor a program which was responsible to those needs and still within the association's capacity to support. Associations had to review (1) the objectives of the training, (2) the nature of the financing to be obtained, (3) the structure of the program to be presented, (4) the type of content and the length of training to be offered, (5) the location or locations at which it was to be offered, and similar matters.

"The Ineffectual Dissertation in Education Remediation by Repackaging," Harvey B. Black, Brigham Young University. As much as one-third of the doctoral effort is devoted to the production of a dissertation. It is assumed that this experience prepares the candidate for scholarly writing. The evidence shows, however, that candidates are poorly prepared. Most doctorates in education never publish a scholarly paper. The dissertation itself is one of the least used and least esteemed of the available scholarly documents. A solution is suggested by the strategy successfully used in the Instructional Psychology program of Brigham Young University. This strategy involved considering the dissertation as a series of related scholarly reports written in forms required by certain publishers who were identified by committee members. These reports might include a theoretical paper, a paper reporting the analysis of original data, and an application-oriented paper.

13.10 ADMINISTRATOR PREPARATION—STATE OF THE ART: UNIVERSITY PROGRAM RESPONSIVENESS TO THE 1970'S (A, SYMPOSIUM)

RICHARD V. HATLEY, University of Kansas, Organizer

Much of the current professional literature suggests that educational administration has undergone dramatic structural and functional changes, and that preparation programs for administrators are in a period of transition. However, publications of numerous organizations,

for example, AASA, UCEA, AACTE, NSSE, and the Kellog Foundation, indicate that the 1950's and 1960's were also transitional decades. This observation prompts at least two alternative explanations. First, like society, educational institutions are in a constant state of flux and require different types of leadership competency over time; therefore, administrator preparation programs must be ever-changing and responsive, not static. Second, desirable refinements and modifications in preparation programs have been identified through research over the past 20 years, but universities have been slow to adopt the recommendations. While agreeing that the second explanation may be disturbingly applicable, this symposium focuses on the possibility that the first is the more viable, or at least desirable, explanation.

The objectives of the symposium are as follows: (1) to present comparatively different universities' program changes in terms of rationale, structure, content, strategies, and ourposes; (2) to consider the applicability of a systemic framework for the assessment, modification, and operation of programs; and (3) to provide a forum for the discussion of models, tools, and procedures uniquely adaptable to the university preparation of administrators of educational organizations.

"An Academic Field Model for the Preparation of Educational Administrators" will be presented by Mark Hansen and Laurence Iannaccone, University of California, Riverside. The School of Education and the Graduate School of Administration have created a joint preparatory program for practitioners of educational administration. This joint arrangement facilitates the integration of interdisciplinary bodies of theory, concepts, diagnostic and management skills which are drawn from and reflect upon the public, business, and educational institutions as they come together to form the metropolitan community.

The pattern of learning is designed to merge the academic experience with the on-the-job needs of the practitioner. The vehicle for this is a series of learning contracts entered into by the student and a supervising professor which stipulates the nature of the on-the-job tasks to be performed, the conceptual framework, diagnostic tools, and management skills which will be employed, and the process which will be used to evaluate the outcome. The contracts draw upon an academic base which takes into account previous training and education as well as individually prescribed coursework taken at the University.

The recruitment program seeks a mix of people currently in administrative roles as well as ones without administrative experience. In order to establish a balance between on-the-job experience and university experience, an attempt is made to obtain released time for the practicing administrators, and administrative tasks for those who have had no formal manangement experience.

"Multi-Cultural Administrator Training and Institutional Change" is the subject to be discussed by Patrick D. Lynch, Pennsylvania State University. He will describe the Penn State Multi-Cultural Administrator Program which has five basic premises. First, trainees from distinct cultural groups bring special knowledge and skills necessary to changing institutions. These knowledges and skills are peculiar to place and time and situation. The trainees are encouraged to use their skills and knowledge to change federal, state, and local public and private institutions during the training program. An assumption is that administrator behavior is more complex than theory-concept development and testing. Administrator behaviors demanded in multi-cultural settings require recognition and analysis.

A second premise is that group solidarity is essential for creating a critical mass for change in an institution. Third, encouraging trainees to keep cultural loyalties, integrity, and task involvement is an essential part of the training process. Fourth, changing institutions to become responsive to clients is the main goal of the training process. The aggregate model is the institutional change model. Clients' involvement in institutional change is the test of the trainees' skills and value commitment. Finally, value commitments are recognized and made explicit.

"Socialization Theory and Program Design in Educational Administration" will be presented by Ronald E. Blood, University of New Mexico. A training program is proposed which consciously applies theoretical constructs drawn from socialization theory to the design of graduate programs in educational administration. The application of socialization theory directs the design of differential programs for future administrators and future researchers. The model incorporates the informal, and perhaps unwitting, learnings through "experience" into a more precise and comprehensive prescription for program development. Program design based on socialization theory is suggested as an effective means to erase the artificial separation of coursework from experience.

Richard V. Hatley and Cecil G. Miskel, University of Kansas, will discuss "A Systems Model as a Guide to Program Revision." Demand articulators for changing and strengthening programs in educational administration at the University of Kansas included faculty members, students, recent graduates, representatives of administrator organizations, and groups closely aligned with the state legislature. As a result of activities over a two year period, the previous program was discarded in its entirety, and a new one was adopted which reflected an interdisciplinary leadership, and a decision-making rationale conceptualized within a systemic framework.

Application of an open systems model required information and decisions about a multiplicity of historical and projected program outputs, including degreed and non-degreed persons for a variety of administrative posts, research, services, and unanticipated by-products. Following output identification, a series of retreats were held to consider throughput strategies and input needs. Throughputs were delineated in terms of a typology of subsystem dynamics. Five preparation components, with supporting rationale for each, were then developed: specialized administration study, education core, research, experience, and cognate studies components with differentiation by academic level and career aspirations of individual students. Finally, necessary inputs were identified, internal and external constraints considered, specific courses developed and sequenced, and various evaluative feedback mechanisms were explored for continuous program monitoring and assessment.

13.15 EFFECTS OF EXPECTANCY (C)

Elementary Social Studies Teachers' Differential Classroom Interaction with Children as a Function of Differential Expectations of Pupil Achievement

JAN T. JETER, University of Wisconsin

The purposes of the study were to determine whether fourth-grade social studies teachers verbally interacted differently with pupils as a function of differential expectations of pupil achievement and to determine whether fourth-grade social studies teachers verbally interacted differently with boys and girls. Data were collected using the Brophy-Good, dyadic observation system. Results revealed teachers differ significantly in their teaching behavior with respect to high and low expectation pupils. However, teachers did not discriminate differentially between boys and girls. The findings of the study suggest that teachers probably do communicate differential performance expectations to different pupils through their classroom behavior.

Formation of Teachers' Expectations of Students' Academic Performance

SHERRY L. WILLIS, University of Texas

The purpose of the study was to explore the formation of teachers' expectations of students' academic performance. First-grade teachers were interviewed or asked to respond to questionnaires concerning their pupils, and ranked their students on expected academic performance at

three periods in the school year. Teachers rankings of expected performance were highly stable over time. Metropolitan Readiness Test scores were significantly correlated with prior teacher rankings of expected performance. Many student behaviors and characteristics were identified as correlating significantly with teachers' rankings of expected academic performance.

Teacher Expectancy and Student Achievement: A Research Review

JANET HIDDE and BARAK ROSENSHINE,
University of Illinois at Urbana

The purpose of the review is to help clarify some of the results and issues in the area of teacher expectancy. The review is limited to those studies in which the independent variable was teacher expectancies about the aptitude or ability of students, and the dependent variable was a measure of student achievement or IQ (adjusted by regression when students were not randomly assigned to groups). Two types of studies are considered separately: those in which expectancies were experimentally induced, and those in which naturally existing expectancies were selected as the independent variable.

The Discriminative Cue Value of Adult Made Expectancy Statements

W. BARRY BIDDLE, J. WILLIAM MOORE, Bucknell University, ELLEN D. GAGNÉ, University of Wisconsin, and WILLIAM E. HAUCK, Bucknell University

Previous research has shown that adult expectation affects children's performance in interaction with the child's past history of success and the present feedback being received. It has been proposed that the explanation of the interaction is that an expectancy statement acts as a discriminative cue for increasing effort. The present study was designed to test the explanation by giving children discrimination training in which success feedback is given only following a high expectancy statement and then only if performance is high. Results showing a significant Training x Expectancy interaction support the conclusion that children can learn to increase effort following an expectancy statement.

Expectancy Statements in the Classroom

VIRGINIA M. MEANS, J. WILLIAM MOORE, Bucknell University, and ELLEN D. GAGNÉ, University of Wisconsin

In a previous study adult expectancy was found to interact with present feedback and past conditioning variables in overachieving students. The present study was designed to extend the finding of an interaction to a classroom setting using underachievers. A significant interaction between Expectancy and Feedback was obtained with the low expectancy-positive feedback group performing at the highest level of all groups. Since a neutral statement group showed no performance increase it can be concluded that general teacher attention does not account for the interaction obtained. The results suggest an interpretation in terms of the reinforcing value of adult approval under various expectancy conditions.

The Effects of Conditioning Expectancy Statements to Success and Failure Outcomes

SUSAN S. BIDDLE, J. WILLIAM MOORE, W. BARRY BIDDLE, Bucknell University

A previous study on the effects of teacher expectancy on pupil performance found an interaction of expectancy with present feedback and past history of success. The results were explained in terms of a discriminative cue function for expectancy statements. To validate the explanation the present study was an attempt to condition first graders to believe or to not believe expectancy statements. The Conditioned-to-Believe group showed lower performance under a low expectancy than the Conditioned-Not-to-Believe group, supporting the discriminative cue hypothesis. Failure to obtain other expected differences is discussed in terms of problems with design.

Conditions Moderating the Self-Fulfilling Prophecy Effect

ELLEN D. GAGNÉ, University of Wisconsin
J. WILLIAM MOORE, WILLIAM E. HAUCK, Bucknell University

Previous studies of the self-fulfilling prophecy hypothesis have obtained mixed results. It is suggested that one possible explanation of these mixed results is the inadequacy of the hypothesis which fails to consider possible variables moderating the self-fulfilling prophecy effect. Two such variables, deduced from discrimination learning and cognitive dissonance considerations, are (1) the learner's past history of success, and (2) feedback being received at present. The significant interaction obtained between expectancy, feedback, and IQ supports the hypothesis that feedback and past history are moderating variables. Results are discussed in terms of classroom applications and a discrimination learning explanation of the Pygmalion phenomenon.

13.19 TEACHERS AND STUDENTS (C)

An Investigation of the Influence of Student Behavior on Teacher Behavior

THOMAS M. SHERMAN, DONALD S. BISKIN, Virginia Polytechnic Institute and State University, and WILLIAM H. CORMIER, University of Tennessee

The relationship between student behavior change and teacher reactions to the change was investigated. One fifth-grade teacher served as the subject and two students in her class were employed as teacher change agents. In a multiple base line design the students' disruptive behavior was modified without the teacher's knowledge. The teacher's reactions toward the students was monitored on several dimensions including: teacher behavior, teaching attitude toward students, and the quality of teacher verbal statements. Results indicate student behavior change had a profound influence on the teacher's behavior. Implications are that students possess potent reinforcing properties for teachers and that students should be trained to be effective students.

Who Is the "Experienced" Teacher?

MYRON H. DEMBO, University of Southern California, and LUTHER JENNINGS, Occidental College

The purpose of this study was to determine the degree and type of differences in teaching competency between a group of experienced teachers and college students with no formal training in education on the following dimensions: ability to effect achievement gains in mini-lessons, teaching methods, ability to solve simulated teaching problems, attitudes toward education, and knowledge in professional education and general academic achievement. No significant differences were found between the groups in their ability to effect achievement gains. Differences were found between the two groups in their attitudes toward education and knowledge of professional education. Implications are discussed for competency-based teacher education programs.

Conceptual Systems and Educational Environment: Relationships between Teacher Conceptual Systems, Student Conceptual Systems, and Classroom Environment as Perceived by Fifth- and Sixth-Grade Students

MARK PHILLIPS, University of California/Santa Barbara, and ROBERT L. SINCLAIR, University of Massachusetts/ Amherst

This study found significant relationships between teacher conceptual systems, student conceptual systems, and student perceptions of the classroom educational environment in selected elementary schools. Additionally, an overview of the findings led to the tentative conclusion that the match or mismatch of student and teacher is more significant in determining student perceptions of the environment than is the teacher conceptual system per se. The study suggests that educators invested with responsibility for training teachers and administrators should devote far more attention to classroom environment and to the matching of teacher-student conceptual systems.

An Investigation of Relationships among Instructional Mode, Teacher Needs and Students' Personalities

JOSEPH P. CARBONARI, University of Houston

Hypotheses that student personality, teacher needs and instructional modes are related were tested and supported. Five elementary schools, 60 teachers and 150 fourth-grade students participated in this study. Three instruments, Organizational Climate Description Questionnaire, Edwards Personal Preference Schedule, and the Children's Personality Questionnaire, were used to assess instructional mode, teacher needs and student personality. Multiple discriminant techniques were used to analyze the data. The magnitude of the relationships supported the hypotheses tested and gave rise to the hypothesis that instructional mode influences student personalities through the interaction of the mode and teacher needs.

Effects of Preparation Time on Vagueness in Self-Prompted Lecturing

JEROME ULMAN, Southern Illinois University, and JACK H. HILLER, Southwest Regional Laboratory for Educational Research and Development

In a previous experiment (Hiller, 1971), manipulation of the amount and quality of information provided lecturers was found to affect the proportion of vagueness terms in their lectures. A manipulation of preparation time provided immediately before subjects lectured on topics designated by the *E* failed to produce a difference in the vagueness proportions. This experiment was designed to test the hypothesis that extent of preparation affects level of vagueness. Two groups of subjects were provided either five minutes or 11 minutes time to prepare lecture notes. Preparation time, number of note words, and a test of topic knowledge all yielded highly significant correlations with vagueness.

Effect of Instructional Pace on Student Attentiveness

ROBERT P. GROBE, Southwest Regional Laboratory Educational Research and Development, and TIMOTHY J. PETTIBONE, New Mexico State University

An observational study employing the Student Classroom Behavior Checklist (developed by the researcher) was conducted to examine objectively the effect of instructional pace on "student attentiveness." Student behavior was video taped while lectures were presented in slow, moderate, and fast instructional paces. Video taped student behavior was observed, quantified, and the resultant data were subjected to multivariate and nonparametric analyses. Results indicated that observational techniques used in this study had sufficient discriminative strength to serve as a sensitive measure of the dependent variable and that instructional pace affects some aspects of "student attentiveness."

14.01 THE MEASUREMENT OF CHANGE IN PERSONALITY CHARACTERISTICS AS EDUCATIONAL OUTCOMES (H, SYMPOSIUM)

JAMES L. CARPENTER, Chicago Public Schools, Organizer

Personality characteristics have been defined and measured in the social sciences with varying degrees of success. The precision of definition and the possibilities for valid, reliable, and efficient measurement of personality characteristics in educational research and evaluation will be the subjects of this seminar. Although surveys are often classified as affective domain instruments and are an important part of educational evaluations, in that a distinction may be made between (1) a person's attitudes about things external to himself, and (2) characteristics of his personality, this seminar will be concerned primarily with the latter.

Because scholars in education have often been limited to measurement of personality characteristics based on self-report, the subset of personality measurements labeled "self-concept" has frequently been used. The measurement of self-concept will receive some particular attention. The methods used to measure personality characteristics and the uses to which the data may be put require ethical and legal consideration beyond that which may be necessary in cognitive skills, and these will be explored. Experiences with the use of personality measurements in evaluation programs in two large city school systems will be shared.

Bertram B. Masia, Case-Western Reserve, will present "Contributions from Behavioral Sciences of Measures of Change in Non-Cognitive Characteristics." He will give an overview of the possibilities for measurement in this field, and will set the stage for the presentations and discussions which follow.

Anthony and Louise Soares, University of Bridgeport, will present "Tests of Self-Concept as Measures of Personality Change." They will speak on the theoretical bases and the validity of tests of self-concept, relationships to other variables such as social class, and measures that can be used in public schools.

"Legal and Ethical Constraints on the Use of Measures of Personality Characteristics" is the topic of Edward Wynne, University of Illinois. Consideration will be given to methods which may be used without infringing on the rights of the individual or his family, the appropriateness of sampling, consent which must be secured, the confidential nature of data secured, and the extent to which findings may be used in formative and summative evaluation.

"Tests That Measure Self-Concept and Experiences With Measures of Self-Concept in the Chicago Schools" will be the topic discussed by Roseann Cyrier, Chicago Public Schools. "Tests That Measure Self-Concept" is also the title of a loose-leaf book that is continually updated as the result of an on-going survey of measures of self-concept. This search has resulted in the use of a test of self-concept, the results of which will be presented.

Larry Barber, Chairman of the Louisville Public Schools' Department of Research and Evaluation, will speak on "Experiences in Louisville Public Schools with Measuring Personality Change in Educational Programs." In the Louisville Schools, Dr. Barber has used, among other measures, the Elementary School Personnel Questionnaire, the Children's School Personnel Questionnaire, and the High School Personnel Questionnaire.

Most statements of educational goals stress both affective and cognitive goals. Even in programs aimed solely at achieving cognitive goals, considerations in the affective domain offer constraints, and

often educational programs are aimed at bringing about affective domain changes, either as end products or as necessary preconditions for changes in cognitive skills. The educational evaluator is, therefore, becoming increasingly aware of the need for measurement in the affective domain.

14.02 MEASUREMENT: CRITERION-REFERENCED (D)

An Index of Parallel Forms of Criterion Referenced Tests as a Function of the Distribution of Test Scores

LINDA K. JUNKER and DEBORAH M. STEWART,
Wisconsin Research and Development Center
for Cognitive Learning

An iterative procedure (adapted from Gulliksen, 1950) for dividing a test into parallel split-halves is validated for criterion referenced tests. The described technique is based on the application of statistics from an initial administration of items. Validation is carried out by administering both forms to another group of students. A decision of mastery or nonmastery is made for each student on both new forms. The coefficient of agreement in the mastery decision is computed for criterion levels of 80, 85 and 90%. The discussion relates the resulting index to the distribution of test scores.

An Application of Criterion Referenced Testing

WALT KNIPE, Grand Forks (N.D.) School District;
EDWARD KRAHMER, Resource Information Center,
Grand Forks, North Dakota

Criterion referenced testing has received considerable theoretical, but only limited practical, application. Grand Forks School District has developed mathematics criterion referenced tests for grades three to nine. The tests are keyed to a hierarchical set of approximately 50 performance objectives and 40 individualized contracts per grade level. These tests were administered on a pre-post basis during 1971-72. This study was designed to consider the following three concerns; (1) adoption experiences when using criterion referenced testing, (2) research conclusions as a byproduct of this testing, and (3) attitudes of classroom teachers to this method as compared to nationally formed tests. Data for the second concern indicate different orders and grade levels at which students learn specific skills in various schools.

Item Selected for Criterion Referenced Tests

GLENN E. ROUDABUSH, CTB/McGraw-Hill

The desirable characteristics of criterion referenced test items and sets of items are described. A two-stage item tryout and item selection procedure are also described. The paper presents the results of using the procedure as compared with traditional item selection procedures used in selecting items for norm referenced tests. It was found that the items selected from the same item pool by the two procedures differ markedly. A rationale for these differences is presented and recommendations for appropriate uses of the two kinds of instruments are given.

A Generalizability Theory Approach to Criterion Referenced Tests

M. I. CHAS. E. WOODSON, University of California

The concept of average proportion of agreement over facets (times, persons, items) is proposed to evaluate items and tests with dicotomous outcomes. Agreement over facets refers to the same outcome, e.g., pass or fail. The average proportion of agreement over times within persons is proposed as an index for selecting items.

Development of a Piagetian-Based Written Test: A Criterion Referenced Approach

WILLIAM M. GRAY, University of Dayton

An attempt was made to develop and validate a Piagetian-based written test with successful use of the logic of specific Piagetian tasks defined as the criterion. Ninety-six randomly selected nine to sixteen-year-olds, stratified by age, were individually presented the Piagetian tasks of pendulum, balance, and combinations, and group administered a 36-item logically equivalent written test. Results indicated that a Piagetian-based written test was successfully constructed. Discussion focused on future lines of research and the possible uses of such a test.

14.03 COMPUTER SIMULATION OF CLIENT BEHAVIOR (E)

Client 1: A Computer Program Which Simulates Client Behavior in an Initial Interview

THOMAS J. HUMMEL, WARREN F. SCHAFFER, CAROLE C. WIDICK, and JAMES W. LICHTENBERG, University of Minnesota

The objective of this research was to create a general computer program which simulates client behavior in an initial counseling interview. Through interaction with the counselor, a programmed client progresses toward the goal of verbalizing a specific problem statement. Client movement is a function of the simulated variables: threat value of counselor and client statements, strength of the relationship, and an index of counselor competence. The simulation project is valuable as a means of training and evaluation in counselor education and in studying counselor cognitive processes. It also provides an opportunity to test the sufficiency of an explicit set of theoretical constructs for explaining client behavior.

14.04 MODELS AND PROGRAMS FOR EVALUATION OF INDIVIDUAL INSTRUCTION (H)

A Formative Evaluation of Individualized Science, An Innovative Instructional System

WILLIAM E. LOUE III, KATHLEEN S. EWELL, and JOANNE B. STOLTE, Research for Better Schools

A study is being conducted to evaluate and revise an innovative science program which was field tested in three schools representative of urban, rural, and suburban populations. The objectives of the study are to assess the program's actual performance of its stated objectives and to inform the program developer of inherent strengths and weaknesses. A phase of the evaluation design is the examination of the Placement Tests. These were administered on a prepost basis for analysis. Results to date have been utilized in program revision and have provided evidence to support the need for formative evaluation of innovative instructional systems.

PIC: A Process Model for Individualization of Curricula

DORIS T. GOW, University of Pittsburgh

An individualized process curriculum design and development model being used to develop extra-mural self-instructional courses at the University of Pittsburgh is described. The model emphasizes curriculum analysis skills, making it particularly suited to complex subjects. It is an individualized structured-curriculum model incorporating four additional components: (1) content analysis procedures based on structure of the discipline to focus on process; (2) sampling of all skill levels to

build independent learning capabilities; (3) procedures for systematic application of research-based instructional strategies to instructional design; and (4) procedures for incorporating independent inquiry into a structured model for instruction.

Individualizing Instruction: Do Aides Make a Difference?

SABINA R. COHEN, Stanford University

The degree of individualization in classes with and without paid teacher aides was studied. Pacing, grouping, and materials diversity were selected as dimensions of individualization to be investigated in four schools with aides and four schools without aides. Observers recorded the level of instructional diversity and group sizes at the start of three-minute observations on randomly selected students in 16 classrooms. Findings indicated a significantly greater diversity of pacing and materials and smaller group sizes in classes with paid aides. The study indicates that paid aides help teachers to individualize instruction.

Assessing Student Performance

THOMAS J. QUIRK, Educational Testing Service

A method of computing a student development index (SDI) to indicate the progress of students at a given grade level within a school is described. This index considers where the students are now as compared to where they were at an earlier point in time, and represents a longitudinal measure of student performance. By studying the relationship between SDIs, staff characteristics, program characteristics, school policies and practices, and materials and facilities, one can develop hypotheses about variables that seem to be related to student development so that these variables can be included in a plan for corrective action by the schools.

14.06 IMPROVING EDUCATION THROUGH THE USE OF COMPUTERS: STRATEGIES FOR NATIONAL CHANGE (B, SYMPOSIUM)

ROBERT J. SEIDEL, HumRRO, Organizer

The purpose of the symposium is to highlight development and dissemination strategies for furthering the use of computers in curricula. In particular, consideration will be given to those features which might contribute to viable national models.

The need for the computer and other technological innovations in education has been documented in recent years by various prestigious panels and Presidential Commissions (e.g., the McMurrin Report, 1970; Proceedings of the Rand Conference, 1971; The Higher Education Report, Carnegie Commission, 1972). The opinion of the McMurrin Commission can be summed up as an assertion that the state of American education is impeded, unresponsive and outmoded as a means of answering the educational needs of today (1970, pp. 14-15). This assessment was recently echoed in *The Fourth Revolution* (The Carnegie Commission on Higher Education, 1972).

> "The most obvious of these problems is the ever-expanding dimension of higher education—the opening of educational opportunity to greater numbers of students; the lengthening list of subjects to be taught; the growing variety of student interests and objectives to be served; the increasing societal demands to be satisfied; and the incessant inlargement of the intellectual domain. . .Something else is needed, and the new technology is part of it." (p. 9)

There have been many visions to match or go beyond these stated needs. Illych's learning web concept foretells the disintegration of traditional educational institutions and, in a rather revolutionary way, addresses the needs of a changing society. The computer plays a central role in the revolution. Leonard's "learning dome" stresses computer potential as a means of enabling children to gain new kinds of intellectual experiences in a totally individualized, adaptive learning system. Levien's four-stage evolutionary framework, while less exciting, probably reflects more realistically some near-term goals. The education system seems to be on the brink of reaching his proposed first stage, widespread, supplementary use of the computer.

Given the needs and the goals of the visionaries, the question to be discussed in this symposium is: How might we get there from here? Luskin and Anastasio have amply documented the hurdles to be surmounted. Projections for acceptance of the computer in education are pessimistically placed by Luskin at about 1987. The Bell Canada Report (1971) is somewhat more optimistic, but the hope of attaining even the evolutionary goals of Levien will require extensive coordinated efforts on a national scale.

It is clear that there has been an acceleration in activity on educational uses of the computer. There are literally thousands of individual development efforts and numerous organizations involved in some type of dissemination activity. In all this activity the one major conclusion is that it is limited to operation on a local, state or regional level. While this mode of operations was essential during early growth of educational uses of the computer, educational computing has reached the stage where broader, more coherent national programs can provide more effective and efficient growth.

If the use of the computer in instruction is to go beyond isolated examples of "the possible," a coordinated national effort with the support of an informed public is essential. A number of strategies for such national effort have been advanced by leaders in education and curriculum development.

Arthur Luehrmann, of Dartmouth College, will discuss the need for discipline-based centers for development and dissemination of innovative curricula. Dr. Luehrmann is presently Director of Project COMPUTE, which is providing support to authors of computer-oriented curricular materials in the field of environmental sciences.

Harold Mitzel, of Pennsylvania State University, will discuss the need for national curriculum development centers which would produce comprehensive materials and delivery systems to satisfy the needs of particular school environments. Joseph Denk, Director of the North Carolina Educational Computing Service (NCECS), will discuss the need for a national organization to facilitate exchange of computer programs and software for educational purposes. Dr. Denk has evolved a unique user-oriented strategy for disseminating computer oriented curricular materials to the 42 colleges and universities served by NCECS.

Robert Seidel, Director of the Educational Technology Program at the Human Resources Research Organization, will present a framework for considering alternative strategies on a national basis. Dr. Seidel is principal investigator for a "Study of National Strategies for Developing and Disseminating Computer Oriented Curricular Materials."

Roger Levien, of the RAND Corporation, will discuss and critique the strategies presented. Dr. Levien has been a leader in the planning commission for the National Institutes of Education.

14.07 DOING HISTORY: SOME NOTES TOWARD A PEDAGOGY (F)

Doing History: Some Notes toward a Pedagogy

STEPHEN NISSENBAUM, University of Massachusetts

This session illustrates the uses of historical documents in the examination of 18th and 19th century social structures. Professor Nissenbaum possesses documents pertaining to witchcraft in 18th

century Salem and the plight of Lizzy Borden in latter day Fall River, Massachusetts. The discussion will cover the attitude of youth in these different New England towns and other implied social arrangements. The session attempts to use documents, not as illustrations of historical problems, but as historical phenomena.

14.08 YOUTH MOVEMENTS IN COMPARATIVE PERSPECTIVE (F)

The American Youth Movement: Ideal and Reality, 1890-1945

TAMARA HARAVEN, Clark University

The paper discusses the ideological and cultural origins of the American youth movement in the 1930's, by analyzing the relationship between the "discovery" of adolescence at the end of the 19th century, and the subsequent emergence of a youth culture. A discussion of the social and political behavior of American youth organizations explores the relationship between ideals and reality in the emergence of a distinct identity of youth and its recognition by society.

Conformity and Rebellion: Contrasting Styles of English and German Youth, 1900-1933

JOHN GILLIS, Rutgers University

Youth movements appeared simultaneously in various European countries at the beginning of the 20th century. Comparison of the English Boy Scouts and the various elements of the German Jugendbewegung in the period 1900-1930 shows that both were reflections of adult attempts to extend middle-class socialization processes to lower social strata as a means of control. The very different forms which the two movements took were a reflection of the contrasting middle-class experience of adolescence in the two countries. Study of these two movements demonstrates the fallacy of attempting to deal with so-called youth movements apart from adult political and social structures.

14.09 A PLAN FOR THE COMPREHENSIVE EVALUATION OF COLLEGE TEACHING (C, SYMPOSIUM)

H. RICHARD SMOCK, University of Illinois, Urbana-Champaign, Organizer

Because of the increasing press to provide objective information for both the reward and the improvement of college teaching, it is important to examine the issue from a variety of perspectives, involving a number of inputs that together comprise a comprehensive and feasible instructional evaluation plan. The purpose here is to describe a 3 × 3 matrix of inputs which could be used, and to present techniques for information collection appropriate to each cell in the matrix. Issues such as the validity and reliability of information-gathering instruments will be developed and discussed, as will be issues germane to the analysis and improvement of specific instructional problems.

An overview carrying the same title as that of the symposium, authored by Richard Smock and Terry Crooks of the University of Illinois, Urbana-Champaign, will be presented by Terry Crooks. Functions which the evaluation of instruction should serve will be analyzed and described. In order to fulfill each of these functions, a 3 × 3 evaluation matrix incorporating three distinct "levels" of evaluation activity and three sources of evaluation information will be proposed.

Level 1 data will be summary data for use in campus-wide comparisons. Level 2 data will be less general, and more pointed to specific teaching attributes and classroom activities common to particular teaching units. It will be used for comparative purposes within teaching units, but, more importantly, it will serve to identify problem areas in instruction and courses. Level 3 data will be very specific feedback data aimed at pinpointing reasons for problems identified by the Level 2 evaluation, and helping in correction of such problems. The three sources for this evaluation information will be students, faculty members, and administrators. All three will have inputs into each level of the evaluation matrix.

The evaluation plan, as described, would not be tied to end-of-course use only. While Level 1 evaluation by students should be done near the end of a course, Level 2 and Level 3 evaluation activities involving both students and faculty colleagues could be conducted during the on-going process of instruction. Under this plan the more diagnostic, searching, and specific levels of evaluation can be carried on at times when they may be most beneficial. Any evaluation system which does not include an adjunct service that can effectively assist faculty members in the analysis and improvement of their teaching performance is an incomplete and possibly unethical system.

In the more specific papers which are to follow this overview, the major cells of the matrix will be detailed more fully, and specific examples of data to be collected and techniques for such collection will be given. Gerald Gillmore of the University of Illinois, Urbana-Champaign, will discuss "Evaluation by Students for University-Wide Comparative Purposes." The important features of this level of evaluation will be developed, and data presented indicating that a very short questionnaire which is valid, reliable, and general enough to be applicable to all courses can be developed. This instrument would provide reliable normed data about both the instructor and the content of a course, mainly for use by campus-level administrators, but also as a help to students selecting courses and instructors.

Lawrence Aleamoni of the University of Illinois, Urbana-Champaign, will represent "Evaluation by Students to Identify General Instructional Problems." His paper will outline the development of sets of questions aimed at gathering student information on various teaching and course attributes for Level 2 use. Statistical evidence of the reliability of resulting instruments will be presented and, because the choice of attributes to be probed can be made to fit the specific instructional situation, face validity should be high.

Barak Rosenshine of the University of Illinois, Urbana-Champaign, will present "Faculty and Administrative Inputs to Instructional Evaluation." This paper concentrates on inputs at Level 2, which would be used primarily by department chairmen and individual instructors. Faculty input could include periodic colleague review of course content, including the analysis of examinations, assignments given, grading of papers and helpfulness of comments, and stated course objectives. Administrative input could consist of comments by departmental and college administrators related to the competence that the instructor displays concerning administrative aspects of instruction, including committee work directly related to teaching improvement, time spent devising new courses and revising old ones, and reliability in performing his teaching duties.

Keith Wharton of the University of Minnesota will present "Analyzing and Improving Instructional Practices." Methods of getting specific feedback data from students and colleagues, and of providing assistance to improve instruction will be examined. Such data are usually collected to clarify and explicate problems identified by Level 2 evaluation. Student input to Level 3 evaluation may take several forms. For instance, if lectures were reviewed negatively at Level 2, an open-ended questionnaire about the lectures could be developed and used. Alternatively, the faculty member could engage in discussions with his students concerning improvement of the lectures. The important contributions to Level 3 evaluation which colleagues and evaluation specialists can make will be examined in the course of the paper.

The measurement of specific attributes of teaching has been probed for a number of years, with encouraging results, and the time has come to apply the knowledge gained in an overall plan that can contribute to the improvement of decision-making at the university level. The importance of information that can assist in making decisions at university, college, and departmental levels about faculty salaries and

promotion is evident in much of the literature today. Evaluations which assist in identifying factors in a course that might need improvement, and those that can provide diagnostic, analytic information about specific problems for use in the process of course development and instructor improvement, are also receiving increased emphasis. The press for objective information to assist students in course and instructor selection has a long history. It is both important and timely that we plan a comprehensive system of evaluation which is feasible in terms of cost (both monetary and human) and profitable in terms of maximizing the educational impact of instruction.

14.10 INNOVATION: IMPLEMENTATION AND EVALUATION (B)

Effectiveness of 4-C Manpower Training Program for Entry Participants

MARY ANN O'CONNELL, West Chester State College, and RUSSELL A. DUSEWICZ, Pennsylvania Department of Education

As part of the overall Pennsylvania 4-C Manpower Training Program, a course for Entry Level participants was developed. This course was designed to prepare individuals, with no prior experience, for eventual employment in the child care services field. A total of 35 participants were enrolled in the initial two program years. Pre- and post-test data for both years, on a scale designed to measure basic knowledge of concepts and terminology in child development, yielded statistically significant gains for each program year.

An Interactive Network for the Introduction of Innovations in Education: Organization, Operation, and Impact

HAROLD HARTY, JAMES M. MAHAN, Indiana University, and RAYMOND J. HANNAPEL, National Science Foundation

The concept, organization, and operation of an interactive network for curriculum change is described and data concerning the impact of this collaborative activity upon instructional practice in public schools and colleges is presented. Specifically, the paper focuses on the following questions: (1) what were the characteristics of a proto-type model for harnessing the innovative energies of individuals and institutions (public schools, state departments of education, colleges, federal agencies); (2) how were participants prepared to serve in the networks; (3) in what activities did participants engage; and (4) what was the network's impact on instructional practice (including pupil performance) in participating public schools and colleges?

Assessment of Selected Innovative Educational Practices by Professional Educators

LAMAR MOODY, NEIL G. AMOS, Mississippi State University

Elementary, middle, and high school teachers and principals indicated their amount of agreement or disagreement as to the educational effectiveness of the innovative practices of nongradedness, team teaching, flexible scheduling, individualized instruction, and open space classrooms. Significantly higher mean scores were obtained by elementary and middle school teachers experienced with the innovations than those inexperienced on all practices except individualized instruction. Significantly higher scores were obtained by experienced high school teachers than by inexperienced teachers on team teaching, flexible scheduling, and behavioral objectives. Experienced teachers and experienced principals did not differ significantly on any innovation. Significant differences were determined by t-tests.

A Comparative Evaluation of an Experimental Program for Preparation of School Principals in Terms of Placement Acceptability

FRED A. SNYDER and LELAND D. MELVIN, Indiana State University

The study focuses upon preparation programs of graduate students who aspire to become school principals. The design of the study is experimental with differing curriculum patterns for the principalship being the independent variable and potential placement of candidates the dependent variable. The method employed is unique inasmuch as controlled simulated interviews were utilized as a perceptual base for data collection. School officials viewing video recording of the simulated interviews indicated their perceptions of matched pair candidates seeking principal positions and who had differing curricular experiences. The method employed in the study could be adapted for simular purposes in other settings.

14.11 PROBLEM-SOLVING (C)

Fluency and Originality as a Function of Group Size

STEVEN V. OWEN, JOSEPH S. RENZULLI, and CAROLYN M. CALLAHAN, University of Connecticut

Although group creative productivity generally surpasses individual productivity, there is little evidence pointing to an optimal group size. This study investigated differences in fluency and originality as a function of group size. Ss who were assigned randomly to groups of three, six, or 12 engaged in four problem solving tasks. Comparisons of group fluency and originality were done with one-way ANOVA's. Results indicated that as group size increased, total fluency and originality increased; however, it was also found that the mean contribution per person is inversely related to group size. Implications of this paradox are discussed.

Study of Kindergarten Pupils' Use of Logic in Problem Solving through SAPA

MARY N. AYERS and JERRY B. AYERS, Tennessee Technological University

This study was designed to: (1) to examine kindergarten (five-year-old) pupils' ability to use logic in problem solving, and (2) to determine the effects of *Science: A Process Approach* (SAPA) on logical thinking. A sample of 40 children with 20 in each of two groups was used. One group was given SAPA as part of their curriculum, while the second group was not exposed to this program. Results obtained through use of basic Piaget tasks indicated the rate of attainment of the conservation skills is affected by the experience provided by SAPA.

The Effect of Immediate Environment on Children's Tendency to Reflect While Solving Problems

THOMAS M. EDWARDS, Boston University, and AUDREY T. EDWARDS, Newtonville, Mass.

Using the Matching Familiar Figures (MFF) test and other measures, Jerome Kagan has related the child's failure to solve complex problems to his impulsiveness rather than to his IQ. Impulsive children respond too quickly and make errors. In the present study, urban sixth-graders were found to be far more impulsive under Kagan's dialogue condition than under any of four written test conditions. Likewise, suburban first-, third- and fifth-graders were far more impulsive under dialogue than under group written conditions. Adult-student dialogue serves to

discourage children from processing information sufficiently and therefore from solving complex problems.

14.13 SELECTED RESEARCH REPORTS (D)

Aligning Components of Intelligence and Learning Performance: A Proposed Rationale for Educational Intervention

GISELA V. LABOUVIE, WAYNE R. FROHRING, and PAUL B. BALTES, West Virginia University;
L. R. GOULET, University of Illinois

The relationship between trial-to-trial changes in free recall and eight intelligence and memory abilities was investigated in a sample of 72 college students. Despite identical acquisition curves under immediate and delayed recall, differences between the two groups in correlational pattern between recall performance and abilities were striking. Under delayed recall, intelligence variables predicted recall performance best, particularly in late trials. Memory variables were most predictive under immediate recall, especially in early trials. These results point to the need of aligning components of abilities and learning performance as a rationale for the modification of intellectual competence.

A Technique for Studying Presentation Variables in Mathematics Text

ALAN W. HOLZ and ROBERT B. KANE,
Purdue University

A technique for studying presentation variables in mathematics text was developed and investigated. The developed technique consisted of a two dimensional category system for classifying messages in mathematics text, procedures for applying these categories to code messages in text passages, and a system for analyzing passages in terms of the coded messages. The validity of the technique was investigated in both descriptive and statistical manners. Within- and between-rater reliability estimates were determined for three groups of raters. The results indicate that the technique has potential for becoming an effective means of studying presentation variables in mathematics text.

Estimating Latent Ability under the Logistic Model for Ordered Categories: An Investigation of Bias and Information Gain

DONALD KOLAKOWSKI, University of Connecticut

A Fortran IV Program has been developed for the conditional maximum likelihood estimation of the parameters of the logistic model for ordered response categories. The bias of the estimation procedure in the recovery of a true score distribution is investigated, and results on information gain are presented for dichotomous and multiple scoring of the same test items. The relative merits of the present formulation and several other psychometric models are also discussed.

An Ordering-Theoretic Analysis of a Propositional Logic Game

PETER W. AIRASIAN, Boston College;
WILLIAM M. BART, University of Minnesota;
BETTY JANE GREANEY, Boston College

In this study, an ordering-theoretic method to determine item hierarchies was applied to a propositional logic game. The data analytic methodology, ordering theory, is a Boolean algebraic measurement model. A game of propositional logic, incorporating the 16 binary propositions of 'p' and 'q' used by Piaget and Inhelder (1958) in their investigation of adolescent thinking, was administered to 60 14-year-olders. A non-linear hierarchy in which certain of the binary propositions were necessary, but not sufficient prerequisites for mastery of other propositions, was identified.

14.14 INSTRUMENT DEVELOPMENTS FOR INPUT AND OUTPUT ASSESSMENT (H)

Validating a Goal Priority Instrument

ERNEST R. HOUSE, University of Illinois at Urbana-Champaign

A statewide goal priority instrument was validated. Public hearings were held, the results summarized by citizens, and an instrument constructed on this summary. The instrument design was that of Stake and Gooler, which suggests important variations in respondent publics, the scales employed, and the specificity of the statements. These variations were confirmed. A diverse group of respondents was interviewed. The validity of the instrument was deemed to be high except that it did not detect an underlying dissatisfaction. Technical and substantive results of the field test are discussed. Caution is suggested in gathering data from the general public.

Methodology Development for Advocate Team Use for Input Evaluation

DIANE L. REINHARD, Ohio State University Evaluation Center

Methdology for input evaluation, as defined by Daniel L. Stufflebeam, is relatively nonexistent. Advocate teams have recently become a popular means of generating and assessing alternative strategies for a set of objectives. This study was undertaken to develop and evaluate methodology for advocate team use in input evaluation. Steps taken included conducting a series of four case studies where advocate teams were used, development of a conceptualization and exemplary operationized procedures for advocate team use, and an evaluation of the proposed methodology through written critiques and empirical application. The methodology was revised, based on the evaluation results.

A Compilation of Preschool Children's Word Frequency Counts

MURRAY A. NEWMAN, SWRL
BRUCE E. BAILEY, University of Texas at Austin

A rank-ordered listing of the 1,000 most frequently used words is presented. The percentage and cumulative percentage of T/language production accounted for by individual words and groups of words are given. The data are based on eight preschool word frequency counts ranging in date of appearance from 1928 to 1971. One of the advantages of this list is that it yields a more reliable frequency scaling based on a total number of almost two million words. At the same time, the data are presented in such a way that source studies considered not suitable for a particular use may be omitted.

System for Objectives-Based Evaluation—Reading (SOBE-R): Its Utility for Program Evaluation and Instructional Management

JUDY C. BORGERDING and RODNEY W. SKAGER,
UCLA

The use of SOBE-R as a stratagem for program evaluation and instructional management is prosposed. A total of six decision categories crucial to instructional management and program evaluation

are explored. These are: instructional program evaluation, resource allocation, educational accountability, instructional management, curricular planning, and selection and guidance. The System's flexibility for dealing with the range of problems frequently encountered in the six decision categories is demonstrated through the use of concrete examples. As a prototypic objectives-based evaluation system, SOBE-R is capable of generating information and providing answers not always obtainable through the use of other types of management systems.

The Development and Evaluation of a System for the Design of Instructional Plans and Resource Allocation

REESE PARKER, Florida State University

A unit level design component, based on Gagné's domains of learning, was developed and subjected to three formative evaluation sessions wherein teachers applied it to their own objectives. Their products and feedback were analyzed to determine whether the component met the goals of (1) identifying appropriate instruction for systematic sequences of objectives, and (2) delineating alternate resource patterns for that instruction. The following results were obtained: Outputs produced meet component intrinsic criteria and are more specific, comprehensive, and defensible than outputs of teachers' normal planning methods, with teachers perceiving that different and more effective use of resources would be a benefit of using the component.

15.01 RECOMMENDATIONS AND SYMPATHETIC SUGGESTIONS FOR FUTURE PRODUCT DEVELOPMENT EFFORTS IN TEACHER EDUCATION (H, EXPERIMENTAL)

SUSAN S. KLEIN, Department of H.E.W., Organizer

Members of the recent National Center for Educational Research and Development Specialist Panel on Instructional Personnel Development (more commonly known as teacher education) will present a round table discussion on a set of topics, including: (1) the redundancy in developing products for teacher education, (2) distinctions between depth and breadth of product development, (3) the evidence which is necessary to label a teacher training product, (4) the need for a distinction between federally financed development activities and private publishing house activities in developing products for teacher education, (5) the procedures which could be used in selecting products to be developed and concommitant procedures for assessing successful development, (6) gaps which exist in products needed for teacher training programs, (7) the problem of articulation and relationships among teacher training programs, (8) the last ten years in developing teacher education products, (9) alternative strategies to implement the development of recommended teacher training products, (10) cost effectiveness of training products, (11) exemplary developmental practices in labs and centers, and (12) barriers to diffusing these practices within and between labs and centers.

The discussion will focus upon general concerns and is designed to provide ideas for labs, centers, and others involved in large-scale teacher training product development.

15.02 LARGE CITY EVALUATION EFFORTS (H)

Organization and Function in Large City Research Bureaus

CHARLES D. DZIUBAN and JOHN H. ARMSTRONG, Florida Technological University

The largest public school research bureaus in the country were studied with respect to organizational structures and functions performed. Directors were asked to provide organizational information and to rank 11 general bureau functions in priority. Principal component analysis yielded five organizational and five functional dimensions. At least 70% of the directors reported that their bureaus performed 11 specified functions ranging from test construction to enrollment studies. Structural analysis showed that the number of levels in the bureaus ranged from eight to one. The directors assigned the highest priorities to instructional and administrative research and the lowest to writing proposals and negotiating with funding agencies.

Establishing and Maintaining the Instructional Support of Inner-City Parents

FRED C. NIEDERMEYER and CONNIE GIGUERE, SWRL

Various strategies were developed for use by inner-city schools in recruiting and training parents to administer instructional exercises at home in support of a school-based kindergarten reading curriculum. Options included training parents in the home as well as at school. Four inner-city schools trained 61% of the parents from 10 classrooms. This represented a 22% increase over previous studies. In order to maintain subsequent parent participation, the effects of having parents sign and return materials used at home was investigated experimentally and was found to significantly increase the number of lessons reported completed at the end of the year.

Classroom by Classroom Analysis of the Impact of a Compensatory Education Program

FRED FORSTER and JAMES CARPENTER, The Chicago Board of Education

The objective of this study was to evaluate the impact of the CO-PLUS project by organizing data to utilize the classroom as the basic unit of analysis. The study employed classroom observations, a variety of questionnaire responses from staff and pupils, achievement test scores, and related data. Questionnaire data were summarized using factor analysis and relationships between observations. Questionnaire responses were identified using multiple regression and canonical correlation. The analysis indicated that significant relationships exist between classroom behavior, staff and pupil attitudes, and achievement test gains, and that the utilization of the classroom as the basic unit strengthens the analysis.

Follow Through Evaluation in Philadelphia

THOMAS McNAMARA, School District of Philadelphia

The regular malaise that manifests itself in the educational evaluation community regarding its methodology, its results, its identity, could well be caused by the difference between its philosophical assumptions and those of its clients. Educational evaluation has inherited the positivist philosophical tradition through ties to American psychology. Its clients almost invariably hold the convictions of the philosophy of common sense, which is fundamentally opposed to positivism's reduction of persons to "its". The moderate realist philosophical position is not reductionistic in this way. It is open to all methods of scientific investigation, both those approved and disapproved by the rigorous scientific tradition.

An Analysis of a Guaranteed Achievement Program to Achieve Specific Educational Objectives, or Performance Contracting, Chicago Style

JAMES L. CARPENTER, Chicago Public Schools

The components of an educational program, designed to ensure the attainment of specific objectives, are described. Program objectives

included the introduction of a new individualized instructional system operating within the same constraints experienced by public school staff, insurance that each child in the program would receive his fair share of instruction, and insurance that children would be validly measured on criterion and norm referenced tests. The effectiveness of the program's components in attaining these objectives is discussed. Observations concerning the efficiency of performance contracting as a procedure for bringing about change also are presented.

15.03 THE SELF-CONCEPT AND AFFECTIVE EDUCATION (E)

Self-Concept Enhancement of Preschool Children

E. MICHELLE PARDEW, and RICHARD G. LANDRY,
The University of North Dakota

The major purpose of this study was to investigate the effects of a self-concept enhancement program on the self-concepts of four-year-old children. Both the experiemental group (N=34) and the control group (N=18) were pre- and post tested on the Thomas Self-Concept Values Test (19 scales) and the Developmental Profile (6 scales). The control group displayed significant increases on three self-concept scales; the experimental group showed significant increases on fourteen scales. The experimental group was shown to have significantly more changes in self-concept scores than the control group.

A Multitrait-Multimethod Approach to The Construct Validation of Self Acceptance

LORETTA A. SHEPARD, GENE V. GLASS,
Laboratory of Educational Research,
University of Colorado

The semantic definition of self-acceptance implies a distinction from objective self-assessment. Acceptance of self should be manifest in the affect associated with self-assessment. Self-acceptance should also be related to acceptance of others. Three constructs, self-acceptance (SA), self-assessment (SE), and acceptance of others (AO), were measured by each of seven methods, including checklists, sentence completion, semantic differential, TAT and Q sort. Subjects were 137 high school students and their parents, college students and older adults. Correlations among tests were presented in a multitrait-multimethod matrix. The average correlation among measures of SA was .54. The convergent validities for SE and AO were .41 and .40, respectively. The two self-constructs were well discriminated from AO. The evidence for the discriminant validity of SA from SE was slight but was corroborated by their differential relationship to other variables.

The Impact of Social Skill Training on the Affective Perceptions of Elementary School Children

MARY ANN MacDOUGALL and
JEANNETTE A. BROWN, University of Virginia

The study investigated the impact of systematic social skill training on the affective perceptions of elementary school children. Two elementary school counselors interpreted the social skill training two days per week over a seven month period. This intervention was observed to make a significantly positive impact on the social acceptance among children. However, the increased social acceptance was accompanied by a significant decrease in the child's reported self-perceptions. These apparently contradictory findings may in fact support the thesis that the more one learns about others, the less one is willing to attribute positive attitudes to one's self.

Affective and Cognitive Correlates of Classroom Achievement: Research for the Counselor

ROBERT K. GABLE, ARTHUR D. ROBERTS,
University of Connecticut

This study examines the relationships between cognitive and affective variables as predictors of classroom achievement. Final social studies grades were obtained and the Watson-Glaser Critical Thinking Appraisal, Cooperative English Test, JIM Scale, and Gable-Roberts Attitude Toward School Subjects measures were administered to 431 11th-grade students. Correlational and multiple regression procedures were employed. Significant relationships ($P < .01$) were found for both the cognitive and affective variables when correlated with course grades. Motivation toward education predicted grades nearly as well as the cognitive variables. Empirical support for the counselor's consideration of affective variables in explaining students' classroom achievement is presented.

Self-Concept Theory and Research: Implications for School Counselors

DON E. HAMACHEK, Michigan State University

The primary objectives of this paper are to order, synthesize, and integrate major research efforts and theoretical writings of the past 30 years which are related to self-image growth, development, and enhancement, and implications of this work for school counseling practices and programs. An intensive review of the literature is supplemented by the author's previous investigations and clinical experience. It is concluded that counselors can and should play leading roles in developing "failure reversal" programs for low self-image youth beset with emotional-social academic problems and handicaps.

15.04 ADMINISTERING FEDERAL EDUCATIONAL PROGRAMS (A, SYMPOSIUM)

DONALD K. SHARPES, U.S. Office of Education,
Organizer

The principal objective of the symposium is to focus the attention of researchers on the problems and issues faced by federal, state and local administrators in dealing with federal programs in education, particularly teacher education, and on their administrative roles.

An analysis of trends in organizational theory and practice will aid in understanding conflicts in managing federal projects. Some of the elements in the administrative role of such managers include the problems in balancing intergovernmental and interjurisdictional requirements, the economics and politics of educational administration, evaluation of projects managed at all levels, and the extent and scope of community participation.

Don Davies will speak on "Administering Federal Educational Policy." Highlights of his discussion will center on planning for new education legislation, congressional and Office of Management and Budget hearings and appropriation procedures, intergovernmental agency activities, and the coordination of relationships with professional associators and with state and local officials.

Carol McGary will discuss, in his presentation, "Administering Federal Programs in a State Agency," those issues associated with coordinating the state's master plan with federally sponsored education programs, the widening discrepancies between program and administrative costs in the budget, and balancing state, federal, and local financial and personnel resources.

How does an administrator in a large metropolis effectively cope with the on-going administration of local projects while seeking continuing federal support? Evelyn Carlson will discuss these and related issues in her presentation, "Administering Federal Programs in a

Big City." In her role as associate superintendent in Chicago, she will describe problems in implementing federal guidelines, the role of community participants in educational decision-making, and the coordination of programs funded by a variety of federal agencies.

Apart from an analysis of the particular role managers of federal programs have in administering federal educational policy, this symposium will help to familiarize researchers and other educational leaders with the special issues such managers face in implementing the federal effort in education at federal, state, and school board level. Frank discussion of the advantages and disadvantages of categorical and block grant programs, school board decisions regarding federal programs, the influence of state plans and state legislative programs, will reveal the impact of change in the performance of certain administrators of federal programs. An understanding of the influences impinging on such an administrator, together with a deepening perception of his distinct role in helping shape policy at different levels, should encourage new research to the continuing development of educational administration training programs, and contribute to new theories of organizational dynamics.

15.05 INSTRUCTIONAL SYSTEMS: EVALUATIVE RESEARCH (H)

A Conversational Access to Computerized Searches of the ERIC System

DAVID R. KNIEFEL, North Carolina State University

The National Center for Occupational Education (NCOE), in cooperation with the North Carolina Science and Technology and Research Center (STRC), maintains the Educational Resources Information Center (ERIC) files in computer accessible form. The development of a conversational access to these files is described. The system is not a truly interactive information retrieval system but one that operates in a minimal (batch) cost environment. System utilization is compared with a previous card reliant system. Cost comparisons and a full description of the system and its interface are included.

A Management Model for Team Development of Self-Instructional Higher Educational Curricula on the Structured Curriculum Model

JANE W. COHICK, University of Pittsburgh

The development of external studies programs in higher education, utilizing instructional design technology, is hypothesized to require the interaction of faculty content experts and curriculum specialists in a special type of development process. A model is proposed to include: (1) delineation of individual roles, (2) specification of the variables affecting model implementation and team interaction, and (3) specification of the steps involved in implementing a structured curriculum model in the development of higher education packaged courses. Model utility and feasibility, as tested in the pilot development of external studies courses at the University of Pittsburgh, are discussed.

Developing Quality Assurance Systems for Instructional Programs

RALPH A. HANSON, SWRL

Quality Assurance Systems provide simple, yet effective, empirically based procedures and materials to satisfy the basic information-gathering and decision-making processes of objectives-based instructional programs. The development of these systems with a wide variety of programs and their use in a large number of school settings has indicated their value and applicability. At the same time, generalizable information has been obtained on the technology of developing and validating such systems. This paper describes the characteristics of Quality Assurance Systems and the procedures required to develop them for either new or existing instructional programs. The development process includes an analysis of the instructional program and application of specific methods.

An Evaluation Strategy for Instructional Product Development

ROBERT J. BERGER and
RALPH A. HANSON, SWRL

A number of strategies have been used and suggested for use in evaluating the new educational programs and other products being produced in research and development institutions. In many cases, the full impact of the use of these evaluation strategies on all persons and institutions in the educational community are not anticipated by the user. This paper presents a highly operational evaluation strategy which specifies the role of evaluation in educational product development. It considers the use of both formal and informal procedures and the information they provide relative to the possible consequences for all concerned.

An Example of the Application of the Assessment and Diagnostic Procedures of a Comprehensive Accountability Plan

GARY L. MARCO, Educational Testing Service

The assessment and diagnostic procedures of a comprehensive accountability plan were applied to several elementary schools from a large midwestern state. Pretest and posttest Word Knowledge and Reading scores from the Primary II Metropolitan Achievement Test administered in 1970-71 to third-graders were used. These data were used to compute Student Development Indices (SDIs). The SDIs were related to school process variables. Application of the diagnostic procedures resulted in the identification of the total and unique contributions of the process variables, individually and in combination. The implications of the assessment and diagnosis for corrective action are discussed.

15.06 THE APPLICATION OF A MODEL FOR THE EVALUATION OF EDUCATIONAL PRODUCTS (D, SYMPOSIUM)

BENJAMIN E. CARMICHAEL,
Appalachia Educational Laboratory, Chairman

A Model for the Evaluation of Educational Products. Charles L. Bertram. Appalachia Educational Laboratory. A model for the evaluation of educational products based on experience with the development of three such products is described. The purpose of the evaluation model is to indicate the flow of evaluation activity as products undergo development. Evaluation is given Stufflebeam's definition as the process of delineating, obtaining, and providing useful information for judging decision alternatives. However, the examples given here indicate that at least a revision of existing evaluation models is needed for the evaluation of R & D products as they are developed and implemented. The model for evaluation includes three stages: design and engineering, field testing, and operational testing. The first stage begins with the identification of product goals, and is followed in order by the writing of structural and process specifications, distillation of criterion variables, and the searching out of operational indicators of the variables. Both the field testing and operational testing stages include collection of base-line data, a treatment, collection of treatment data, analysis and synthesis, and feedback to appropriate recipients. The appropriate recipients during field testing are those responsible for product development, and the primary recipients of evaluation information

resulting from operational testing are those responsible for product diffusion.

The Evaluation of an Early Childhood Education Program. Brainard W. Hines, Appalachia Educational Laboratory. The evaluation of AEL's Home Oriented Preschool Education (HOPE) Program spanned a year of design and engineering and three years of field testing and program development. During this time, both formative and summative evaluation activities took place. These evaluation events took place prior to the present model's construction, and contributed to the evaluation plan. Formative evaluation, intended primarily for the program development staff, was conducted by personnel within the program, and consisted mainly of continuously gathered data on student interest and the effectiveness of specific techniques. Summative evaluation, intended for use by individuals in management, was conducted by a separate evaluation team over three one-year intervals and covered program effectiveness measures as well as attitude surveys and cost analysis surveys.

The Application of the Evaluation Model to a Regional Educational Agency. Ermel Stepp, Jr., Appalachia Educational Laboratory. A model for the evaluation of educational products is being applied in the evaluation of the Educational Cooperative Development Program of the Appalachia Educational Laboratory. The Laboratory is conducting a three-year field test of a regional organizational management structure to increase the problem solving capabilities of school superintendents. The evaluative effort is to ascertain the fit of the field entity with the Educational Cooperative Development Program's design and effectiveness in institutional objectives. The general evaluation design for the Cooperative includes conceptualization, model validation, and model utilization corresponding to the stages of development in the model for the evaluation of educational products.

The Application of the Evaluation Model to a Career Education Product. Randolph R. MacDonald and Charles E. Kenoyer, Appalachia Educational Laboratory. Career decision-making, a recently initiated program now in its design and engineering stage, is described. Early interaction between the product development process and the evaluative process has served several purposes. Evaluation specialists have contributed information to be used in program development as well as tentative plans for summative evaluation. Program activities are influenced not only by ongoing evaluation but by anticipated evaluative procedures. This process leads to convergence toward a product that not only does what was intended but can be shown to do what was intended. The activities overlap in time to a considerable degree. Before all overall goals of the program could be identified, some were identified as essential and development of units to meet these goals was begun. Some work was being done on behavioral objectives before program goals were entirely established.

The discussants will be invited to react to the appropriateness of the model. Dr. Desmond Cook, Director, Educational Program Management Center, The Ohio State University, will consider the model in terms of information which should be supplied to decision makers. Dr. Frank Chase will react in terms of the practicality of proposed procedures and the degree to which the proposed model may be generalized to other R & D efforts. The anticipated outcome of the discussion is a set of suggestions for alternatives to the evaluation model.

15.07 STATISTICS: DATA ANALYSIS (D)

The Qualitative Logistic Response Curve and Its Application to Developmental Data

WILLIAM H. SCHMIDT, MARYELLEN McSWEENEY, WALTER G. HAPKIEWICZ, Michigan State University

A methodology for characterizing the functional relationship between a dichotomously scored criterion variable and a quantitative independent variable is proposed. The model was given by the logistic response curve, and maximum likelihood was employed in the estimation of the parameters. These analytical procedures were applied to data concerned with the development of aggressive behavior in children in grades one, two and three. The model was fitted separately for boys and girls and fit was obtained at the .05 level in both applications. Comparisons of the parameter estimates lead to a meaningful characterization of the sex differences found to be present.

Analysis of Rank Data with Tied Values (An Examination of the Rank Ordering of Eight Definitions of Integration by Graduating Seniors in a Desegrated Northern School)

LEONARD A. MARASCUILO, University of California, Berkeley; JAMES BAVERY, Center for Research and Development in Higher Education

Techniques for extending Friedman's Analysis of Variance on Ranks to models in which tied observations are the rule and not the exception are described. The presentation is based on data generated on about 900 high school students who were given eight definitions of integration to read and rank order by assigning ranks of one, two, three to the three definitions most like their own and a rank of eight to the definition least like their own. Planned and post hoc analysis are made across sex, race, social class and other indicators of political, social, and educational involvement.

Approximate Evaluation Techniques for the Max Hierarchical Clustering Procedure

LAWRENCE HUBERT, The University of Wisconsin

A technique for testing the hypothesis that a hierarchical sequence of partitions constructed by the max method could have been obtained solely on the basis of "noise" is discussed. The evaluation procedure involves comparing a rank-order goodness-of-fit measure (Goodman-Kruskal γ statistic) to the tabled percentiles obtained from an approximate cumulative permutation distribution of the measure. One of the rank orderings of the object pairs used in defining γ is derived from the original similarity values between the objects to be partitioned; the second rank ordering of the object pairs is obtained from the partition hierarchy itself.

The Use of Linear Models in the Analysis of Categorical Data Collected in Educational Studies

JOHN L. WASIK and JOSEPH J. DONAGHY, North Carolina State University

The statistical analysis of categorical data collected in a variety of educational studies is discussed in the general linear model framework. Distinctions between sampling plans used in the collection of experimental and/or survey data in a general linear models approach allow for the analysis of categorical data according to whether the hypotheses of interest deal with association between response differences between factor levels, or association of responses within factor levels. Numerical examples for the educational research literature are given which demonstrate the flexibility of this approach and emphasize the importance of stating and sequentially testing models of interest.

Interval Estimation of Correlation Coefficients from Explicitly Selected Samples

ARLEN R. GULLICKSON, University of Minnesota; KENNETH D. HOPKINS, University of Colorado

There is, at present, no analytically devised procedure for assessing the inferential characteristics of the Pearson product moment correla-

tion coefficient which has been estimated from a sample in which there is explicit selection on one of the variables. This study employed computer simulation to investigate several approaches to interval estimation and hypothesis testing. The results of this work provide persons who use correlation coefficients corrected for explicit selection with (1) formulas for testing the hypotheses $\rho = 0$, and (2) nomographs that can be used to set confidence intervals about the correlation coefficients.

15.08 CAREER DEVELOPMENT AND DECISION MAKING RESEARCH (E)

A Comparison of Experimental Group Guidance and Individual Counseling Methods to Facilitate College Students' Vocational Development

R. DOUGLAS SMITH, Appalachia Educational Laboratory, and JOHN R. EVANS, Southern Illinois University

The effects of three treatment procedures on college students' vocational development were investigated. Treatment procedures included: (1) experimental guidance (subjects participated in a five week vocational guidance program), (2) individual counseling (subjects received individual counseling), and (3) control (subjects received no treatment). Evaluation of the relative effectiveness of treatments was based on measured vocational development and on student assessment of assistance received. Multiple linear regression techniques were used for all phases of the analysis. The experimental treatment was more effective in increasing vocational development than either the individual counseling or control treatments, and the individual counseling treatment was more effective than the control treatment. No differences were found among groups in regard to individual counselors, sex of students, or in counseling assessments.

Evaluation of a College Credit Course Designed to Facilitate Decision Making for Career Development

JOHN R. EVANS, Southern Illinois University

The effects of an academic credit course designed to facilitate college students' vocational and educational development were investigated. Ninety-six students attended weekly large group information presentations and small group discussion meetings for a total of eight weeks. Evaluation of the course was based on measurement of students' vocational development across the period of time the course was in effect, and on students' assessments of the various tasks in which they were involved during the course. The course was effective in facilitating measured vocational development. Students assessed course tasks positively, and indicated course related growth toward selection of academic majors and occupations.

A Branching-Type Simulation Device for Studying Career Decision-Making

ROBERT J. AMBROSINO, Albany Medical College; and STEVEN J. KIDDER, Center for Social Organization of Schools, The Johns Hopkins University

This paper describes a new branching-type simulation device for analyzing the career decision-making behaviors of high school students. Each student confronts a sequence of decision-making points. Depending on the sequence the student takes, he or she will handle numerous realistic situations. These decision-making points involve dealing with the people and situations the students might encounter in life. The particular sequence followed is entirely up to each student. The response protocol represents a measure of the student's decision-making behavior with regard to schooling and career development. The student's response pattern will be analyzed by race, sex, and personality type.

15.09 STUDIES OF TEACHING (D)

Student Teachers' Self-Analysis of Teaching Behavior

LILLIAN R. DUNAY and HELEN F. ROBISON, The Bernard M. Baruch College, C.U.N.Y.

Analyses of teaching behavior, transcribed from video taped samples by elementary student teachers, using a new instrument, Baruch Behavior Analysis, were examined for accuracy, reliability, quantification, and interpretation. The instrument helps the student to self-analyze and prescribe improvement for his behavior as to extent and patterns of teacher talk, distribution of pupil talk, categories of teacher questions, kinds of responses teachers make to students' verbalizations, and quality of teachers' non-verbal behavior. The data indicated that most students recognized the need to improve their teaching and made specific appropriate recommendations for amelioration.

Teacher Behavior as a Measure of Teaching Effectiveness: Reinforcing and Questioning

THEODORE R. CROMACK, Johnson State College

Pupil achievement and pupil satisfaction are related to questioning and reinforcing behavior of teachers. A videotape record of 20 teachers teaching a standardized lesson is used to obtain the frequency of teacher behavior. Pupils are administered a pretest and a posttest and complete a rating scale for classification of teachers into most and least effective. The individual pupils' aptitudes are plotted against achievement and ratings for various teachers to test for interaction with treatment of those teachers evidencing high and low frequency of behaviors.

Markov Chain Analysis of Classroom Interaction Data

BARBARA M. HARTNETT, Lincoln College, and ROBERT E. RUMERY, Illinois State University

Classroom interaction data matrices obtained from a preservice training project in techniques of achieving divergent pupil responses were compared using a statistical procedure outlined by Darwin (1959). The procedure interprets interaction sequences as realizations of Markov chains. Contrary to results of an earlier study (Pena, 1972), interaction matrices were found to satisfy the dependency assumptions for Markov chains. Significant differences were found between interaction sequences for classes at different levels and between trained and untrained student teachers. Within-teacher comparisons were nonsignificant. Pena's conclusion that the tests are too powerful is criticized on logical and methodological grounds.

The Development and Effectiveness of Instruments for the Measurement of Classroom Teacher Accurate Empathy, Warmth, and Genuineness

WALLACE V. EGGERT, and JOHN N. MOORE, Simon Fraser University

This study served to develop and test instruments for the measurement of teacher accurate empathy, warmth, and genuineness. Preliminary instruments developed were used by 15 teachers to code video tapes of their classroom interaction over a six week period. Pre- and post-tapes were collected. The study resulted in scales of empathy, warmth, and genuineness with levels easily discriminated by teachers and which exhibited high inter-rater reliabilities. Pre- and post-tape

differences were minimal during the developmental process. Research is now in progress to determine the effectiveness of the revised scales as teacher training instruments.

Course Evaluation Schedule: Development and Cross-Validation

JON C. MARSHALL

The purpose of this study was the development and cross-validation of a selection-type inventory for student evaluation of course instruction. The pilot instrument was administered to 17 education classes containing 636 students. Analysis of variance and factor analysis results indicate that 40 items from the inventory can be grouped into five scales having α-reliabilities of .943, .908, .860, .811, and .907 respectively. The final form of the inventory is reproduced for scoring using an Optical Scann 100. The revised instrument was administered to over 3,000 students taught by approximately 50 instructors. Analysis of these data is in progress.

15.10 INDIVIDUALLY GUIDED INSTRUCTION: RESEARCH AND FINDINGS (A)

The Dynamics of Instruction Systems: Feedback Control in Individually Paced Instruction

WILLIAM M. AMMENTORP, University of Minnesota;
ROBERT MILLER, Northern Arizona University;
JON MORRIS, University of Minnesota

Any attempt to adjust the pace of instruction to the individual student's capacity to master academic tasks results in complex problems of educational system design and management. These complexities are due to simultaneous variations in student and teacher behavior and are resistant to control by traditional management techniques. This paper contains a mathematical model of one such instruction system along with its associated feedback controls. Model simulation and control theory principles are used to design instruction activities and management practices which reduce student waiting time and promote learning activity. The model is validated using data collected in an elementary school 'pod.'

An Analysis of the Relationship of the Multiunit School Organizational Structure and Individually Guided Education to the Learning Climate of Pupils

RICHARD GARDNER NELSON, University of Rhode Island

A comparative study was conducted to investigate the relationship of the multiunit school organizational structure and Individually Guided Education to the learning climate of pupils. The responses of 410 pupils in traditionally organized schools were compared to the responses of 566 multiunit school pupils on several attitudinal measures including self-concept as learners, attitudes toward instruction, other pupils, teachers, administration, plant, community, and school in general. Analysis of variance indicated that the multiunit school pupils generally had a more positive attitude than the control pupils on all measures, with the exception of attitudes toward teacher and administration where no difference was found.

Differentiated Staffing and Non Teamed Organizational Structures as They Affect Elementary School Teacher-Pupil Interaction

THOMAS A. PETRIE, and RONALD E. HULL, State University College–Fredonia; and INEZ N. PETRIE, Fredonia, N.Y.

Erik Erikson's stages of man provided a theoretical guide to investigate differences between differentiated staff and non teamed organizational structures on the interaction of children and adults. Erikson's characterization of the four crisis stages of childhood were synthesized for complementary "ideal type" teacher-learner roles. Observers were trained to record transcripts of a time sample of pupil-adult interactions. The transcripts were analyzed and behaviors categorized according to the frequency of the operational pupil and teacher behaviors. There were statistically significant differences between differentiated staff and non-teamed schools with regard to two "ideal type" teacher categories ($P = < .05$) and two student categories ($P = < .01$).

15.11 OCCUPATIONAL TYPES AND OCCUPATIONAL PRESTIGE (E)

Five Year Stability of Holland Occupational Types

JOHN G. CLAUDY, American Institutes for Research

Holland has proposed a theory of vocational choice based on the assumption that most persons can be categorized into one of six types in accordance with their personality attributes. This paper reports the results of an examination of occupational type stability rates for a large sample from the general population. Project TALENT five year follow-up data for former 12th-graders were used. Stated occupational choices obtained five years apart were categorized into one of Holland's types. Results included stability and change rates for each type for males and females. Baseline data are provided for use with future studies.

Correlates of the Perception of Occupational Prestige

M. S. TSENG and C. I. RHODES,
West Virginia University

Measures of the perception of occupational prestige and vocational maturity of 332 high school students representing grades 9 through 12 were investigated together with variables age, intelligence, and father's occupation. Significant positive correlates of the perception of occupational prestige were: vocational maturity ($p < .01$), intelligence ($p < .0001$), and educational level associated with father's occupation ($p < .01$) for the male group ($N = 162$); vocational maturity ($p < .001$) and intelligence ($p < .0001$) for the female group ($N = 170$). Intelligence correlated significantly with vocational maturity in both the male and female groups ($p < .001$). Sex differences were found between a number of variables.

Relationship of Major to Professional Work-Orientations among Graduate Students in Educational Psychology

LANA C. MALONE, KAREN D. DIETZ, and
PAUL G. LIBERTY, JR., Measurement and
Evaluation Center, The University of Texas at Austin.

The present study is concerned with attempting to examine professional work-orientations and personality characteristics of graduate students majoring in counseling and school psychology. Forty-nine graduate students in a required graduate course in psychometrics were asked to respond to the "I Favor" Questionnaire, an instrument that assesses orientations and preferences of individuals toward Research vs. Service, Psychometric vs. Impressionistic, and 23 other dimensions. The scale items are of the bipolar, semantic differential type. Respondents mark their answers along a seven point continuum. Analyses of variance were performed on the responses of three groups of students: Counseling ($N = 23$), School ($N = 11$), and Other ($N = 13$). Significant ($p < .10$) differences were found on ten of the 25 variables. The results of the analyses are reported and the implications for graduate training programs are discussed.

15.13 RACE AS A FACTOR IN LEVEL OF UNDERSTANDING BETWEEN COUNSELOR AND CLIENT (E)

The Relationship of Race and Level of Understanding Between Counselor and Client in the Initial Interview

SEYMOUR BRYSON, Southern Illinois University

The objectives of this study were to determine the relationship between color (black and white) and level of understanding between counselor and client. Relationships between inter and intra color differences in understanding during an initial counseling interview were also investigated. Excerpts of the interview were utilized in stimulated recall sessions and three trained raters independently evaluated the degree of understanding. Results indicate that color is related to understanding in counseling. Black counselors understood black counselees best; white counselors understood white counselees best. Overall, white counselors understood both white and black counselees better than did black counselors.

15.16 CLINICAL JUDGMENT AND PROBLEM SOLVING (C, SYMPOSIUM)

LEE S. SHULMAN, Michigan State University, Chairman

This symposium will explore a number of research approaches currently being employed in studies of medical problem-solving and judgment. A variety of methods and underlying theoretical frameworks are utilized in the approaches to be presented and discussed. Such problem-solving tasks are viewed as paradigmatic of a wide variety of real life problems that are the objects of formal school instruction. The objectives of the symposium are: (1) to clarify the underlying theoretical framework of each program of investigation and to indicate the relationship between the model of judgment selected and the methods of investigation employed; (2) to consider the relationship of these studies of medical problem-solving and clinical judgment to more general psychological theories of decision making and problem solving; (3) to indicate the implications of each investigation for the training of medical students and allied health personnel. Each investigation has significant practical implications for our understanding of the content of the clinical skills to be taught. An important function of the symposium will be to explore the extent of commonality in educational implications among these varied investigations.

Arthur Elstein, Sarah Sprafka, and Lee Shulman of Michigan State University will present a paper on "Analyzing Medical Inquiry Processes." The research conducted by this group has examined in fine detail the medical problem solving and judgmental processes of a relatively small sample of experienced physicians. Each subject was administered an extensive battery of medical and non-medical problems as well as a number of personality scales. The battery included three simulated medical cases in which actors played patient roles and the physician-subject interacted with and interrogated the actors and a set of four patient management problems which were slightly modified versions of four problems prepared by the University of Illinois research group also on this symposium. A model of medical judgment was empirically developed from careful observation of these physicians in the pilot sample by working up cases in which actors were used. The model distinguishes between the processes of acquiring medically relevant data and interpreting these data to reach justified diagnostic conclusions. It further draws attention to the processes of hypothesis generation and hypothesis testing as central to medical judgment. The assessment of clinical judgment deriving from this model yields quantitative scores which separate data acquisition from data utilization, evaluate the data used to generate and terminate diagnostic hypotheses, and compare the subject's interpretation of the cues he obtained to an optimal set of weights which are based on the opinions of an expert panel.

Individual differences on the measures are also analyzed with respect to the biographical and personality data collected on these physicians. The educational implications of this model are: (1) that training of medical students should place greater emphasis on generating and testing diagnostic hypotheses; (2) that students should be specifically trained in the use of heuristics which optimize the utilization of data in problem solving; (3) that evaluation instruments should focus on hypothesis generation and data utilization. Experimental studies conducted to study the validity of these implications will be discussed.

Christine McGuire and Gordon Page of the Center for Educational Development, University of Illinois College of Medicine, will present a paper on "Measuring Clinical Judgment with Clinical Simulations." The Illinois group has been working for several years on the development and testing of a series of simulated medical problems used for instruction and evaluation at various levels of professional training. Each problem begins with a brief introduction containing some information about the patient, including the chief complaint. The task of the problem solver is to gather information and to determine an appropriate management for the patient. The particular problems to be reported on in this symposium presented that task to the physician in a booklet accompanied by a set of answer sheets and figures. In order to obtain an answer to a question, the examinee rubbed out an opaque overlay covering that section of the answer sheet corresponding to the question that he asked. Items were given weights ranging from high positive to high negative depending upon their contribution to the solution of the problem. Subjects were scored for overall competence, proficiency in workup and management and attack strategy. Strong emphasis was placed on proficiency (a kind of selective thoroughness) and less emphasis was placed on efficiency (reaching the solution in as few as possible steps).

Fifteen of the physicians in the MSU study completed a slightly modified version of four patient management problems designed by Ms. McGuire and her associates. These problems have been analyzed by the methods developed by the MSU group and by the methods of the Illinois group just described. An interesting feature of this symposium is the opportunity to use the same set of data to compare and contrast two models of analyzing clinical judgment.

The third paper in this symposium will be presented by Lee Lusted of the University of Chicago. His topic is "Using Signal Detection Theory to Teach Radiographic Interpretation." Lusted has used receiver-operating characteristic (ROC) curves as a method to help evaluate radiologists' diagnostic performance. These curves provide a natural distinction between the inherent detectability of a signal (radiographic image) and the judgment of the observer (medical student, physician, x-ray technician, etc.). His recent work has been concerned with the use of signal detection theory in training paramedical personnel to screen x-rays. He will report on the use of signal detection feedback to improve the performance of technologists, residents and staff radiologists.

15.17 ADAPTIVE MODELS FOR INSTRUCTION (C, SYMPOSIUM)

DUNCAN N. HANSEN,
Florida State University, Organizer

The presentation will provide a synthesis of related research literature for adaptive models in four categories: (1) drill and practice models, (2) concept acquisition models, (3) rule learning models, and (4) regression-based learning prescriptive models. The presentation will identify operational adaptive models in terms of their purpose, formal structure, and potential instructional payoff. The coherence among the adaptive models should provide a paradigm for identifying the

multi-variate requirements that functionally relate student characteristics, instructional mode, task characteristics, instructional decision processes, and the allocation of learning resources. The symposium will relate how each adaptive model can be developed through a conceptual, computer simulation, and empirical phases so as to optimize its rate of development.

In, "The Nature of Adaptive Models," Duncan N. Hansen, Florida State University, proposes that the nature of adaptive models can be reviewed in terms of the following objectives: (1) to provide a fine-grained monitoring of each student's learning process; (2) to provide a set of instructional decision rules that optimize the students' motivation and progress; (3) to provide a decision allocation procedure that optimally assigns instructional media, materials, and incentive rewards according to each student's characteristics and performance; (4) to provide prediction of performance and time parameters for both highly successful and deficient students; and (5) to provide for scheduling of all instructional resources so as to lead to minimization of cost.

Each model will be characterized within a framework which allows for a representation of student characteristics, learning task characteristics, a performance data base, selection of an appropriate model, formalization of individualized parameters, deriving of a learning prescription, allocation of learning resources, evaluation of student progress, and evaluation of the models. The general presentation will conclude with a discussion of the inter-relationships of simpler and more complex models.

The presentation, "Drill and Practice Models," is by Bob Brown and Susan Taylor, Florida State University. Drill and practice may be defined as a presentation of a series of items to which the student must respond for purposes of improving accuracy and increasing speed of performance. In computer administered drill and practice the capability exists to adapt the type and amount of practice on the basis of student characteristics and prior performance.

The general components of the drill and practice model include the utilization of pretest scores, task characteristics, and student characteristics for construction of individualized prescriptions of items to be presented within the drill sequence. Decisions are then made regarding the number and sequence of items, and criteria for predicting mastery for each item. A knockout strategy is employed for presenting the items, in which a mastered item is dropped and replaced with a new item. This procedure continues until all items have been mastered. A similar process is employed for review purposes. Pacing routines are introduced via a word by comprehension index which can be maximized.

"Concept Acquisition Models," presented by Robert D. Tennyson, Florida State University, will describe an adaptive instructional strategy for individualized concept teaching which is represented by a paradigm designed according to decision processes that adjust instructional variables to individual differences and differential learning performance. The basic variations of the strategy are of two functional classes: pre-task and within-task variables. Pre-task variables include individual trait difference and treatment variables; within-task variables provide for manipulation of such things as the number of examples, the degree of prompting and difficulty, and the type of feedback/correctional process based on individual state criteria. The pre-task procedure adapts the presentation to the learner's entering trait capabilities, while the within-task presentation is self-modifying because adaption is to the learner's current response pattern and state levels. An adaptive instructional strategy for teaching concepts according to a learner's error response pattern after an intermediate evaluation within the instructional sequence is presented.

Paul F. Merrill, Florida State University, will present "Rule Learning." The Adaptive Instructional Model for rule learning utilizes linear regression techniques and heuristic decision rules in an iterative cybernetic process to select and sequence instructional components into an idiosyncratic, instructional strategy for each student. The instructional components will be stored in interrelated, cross-referenced component pools. The components consist of rule statements, objectives, examples, incomplete examples or problems, prompts, feedback, etc. Task characteristics such as difficulty, and trainee characteristics will be utilized to predict and specify an initial instructional strategy. Within-task performance measures, such as number of items correct and test item response latency, will be collected and utilized by the decision rules to update the instructional strategy. The model can be implemented in terms of initial presentation, review, and integrative sequences. The model manipulates number of examples, type of practice problem, level of prompting, rate of stimulus support fading, and amount and placement of review and integrative materials.

Harold Kribs and Duncan N. Hansen, Florida State University, will speak on "Regression-Based Learning Prescriptive Models." The regression models utilize predictor variables such as aptitude, prior educational experience, trait curiosity, etc., as well as state indices such as recent performance, error patterns, confidence level, latency pattern, etc. to formulate an instructional prescription. Using least squares techniques, any of the following can be predicted: media options, difficulty level, redundancy level, remediation, content and sequence, instructional method, and laboratory tasks. The techniques for encompassing other models such as drill and practice within this model will also be presented. The simulation of the model, as well as some empirical results, will be reviewed.

The presentations included in this symposium represent an integrated effort to incorporate a comprehensive array of individual difference variables into the decision processes for selecting instructional strategies, alternative media, formulating prescriptions, predicting mastery, etc. The educational world is still at the intitial stages of investigating the potentialities of adaptive instructional models. The presentation will present four models that are operational and integrated.

15.18 REPORT OF THE LITERATURE SEARCH SUBCOMMITTEE, NCRE (NATIONAL CONFERENCE ON RESEARCH IN ENGLISH), PHASE I OF A STUDY OF TEACHER EFFECTIVENESS IN THE LANGUAGE ARTS (C, SYMPOSIUM)

SARA W. LUNDSTEEN, University of California, Irvine, Organizer

The objectives of the symposium are: dissemination of the "state of the art" in seven areas of research, including identification of certain teaching behaviors, differentiation of teacher from teacher according to certain styles or patterns of behavior, and data from teaching styles that can be identified by description of teacher-learner interaction.

What behaviors promote the productive teaching of English? The cooperative research committee of the NCRE posed this question and asked for volunteers for a literature search to begin a five-phase study. The committee devised a literature search form for this purpose. One of the problems already noted is that research reports of experimental methods tend to report only group procedures. Description of and accounting for individual teaching behaviors are conspicuously lacking. The work of this subcommittee offers what little basis there is for the committee's projected series of pilot studies. A variety of perspectives on this problem emerges from the different areas of the field of English.

Bernice E. Cullinan, New York University, will speak on "Children's Literature." Clearly specified behaviors for teaching literature to children have not been subjected to research analysis. The primary activities in the area have included analyzing the content of children's literature, specifying curriculum content for literature programs, categorizing pupils' responses to literary selections, identifying children's preferences in literature, measuring the effects of the use of literature on children's reading, composition, and language abilities, and

describing teacher preparation and teaching practices. Research in teaching literature to children has been impeded by lack of precise measurement and observation instruments, methods of assessing process variables and a generalizable theory of instruction.

"Listening" will be the topic of Sara W. Lundsteen, University of California, Irvine. Clearly specified behaviors for improving the listening skills of children on the part of individual teachers are apparently unrecorded in the research literature. Specific teaching acts are unanalyzed. The primary research activities in the area have included auditory discrimination, barriers to effective listening, compressed speech, correlations with scores from various listening tests and tests of other linguistic achievement (e.g., reading) and mental ability, factor analyses of listening skills (including critical listening), listenability of material (paralleling readability), and the construction of various instruments for measuring listening. The teaching of listening is represented mainly by a host of hortatory essays or by gross group manipulation with (to date) no reported recording and analysis via video-tape of actual teaching behavior, listener behavior, or the interaction between the two. Several hypotheses emerge as to productive possibilities for future research.

A study entitled "Reading" will be presented by Robert Emans and Sharon E. Fox, the Ohio State University. This study found that (1) trained teachers display method prescriptions while untrained teachers do not, (2) teacher personality influences teaching behavior, and (3) teachers place children into reading ability groups according to some noncompetence based (but unspecified) criteria on learning potential, as teachers have difficulty gaugeing the ability level of children—especially those they judge as of either high or low ability. In addition, teachers were found to be the predominant actors in the classroom as they restrict quantitatively and qualitatively the participation of children. Teachers show very high rates of verbal behavior in early reading instruction. The potentials of child-child interaction are seldom recognized as a part of the learning situation. There is a need for future research to explore the visible attributes of children which teachers use for judging their learning potential, and to explore the kind of in-service training needed to protmote the occurence of teaching behaviors which help children to learn.

"Speaking" will be the subject of James T. Fleming, State University of New York at Albany. Very few studies were found after a cooperative effort to search the literature for specific teacher behaviors which focus on oral language and speaking. One source of difficulty in finding studies may be traceable to the overly restrictive or inappropriate selection criteria. Before extending this component of the project, some broad definitional problems should be resolved. One example is the notion of teaching behaviors which either should be changed or dropped. Other recommendations include shifting subsequent attention to search areas which are related to oral language and speaking but which will yield more appropriate descriptive examples. An area of search which could receive attention profitably is the situational context of teacher behavior in relation to children's oral language and speaking. Some relatively recent sociolinguistic research is a pertinent source for this search area.

William D. Page, University of Chicago, will present a paper entitled "Teaching Linguistics to Elementary and Pre-School Children: Review of Research and Comment".

New knowledge about language and how it works is apparent in educational research and literature. Effects upon teacher-pupil interaction in instruction are not yet clear. A search was undertaken for studies describing behaviors of teachers in the acts of teaching linguistics to elementary and preschool children. Only worthy studies reported between November 1966 and November 1971 are treated. Guides, general directions, unsupported value-oriented studies, and studies treated in other sections of the cooperative literature search effort are excluded. No studies surveyed perfectly fit the stringent criteria. Selected, marginally appropriate studies are reported to represent research trends: linguistically controlled teacher behavior, linguistically controlled curriculum tasks, and teacher-pupil behavior effects due to linguistic manipulation. Analysis of the relationship of linguistics and education generates recommendations for research.

Richard E. Hodges, University of Chicago, will speak on "Spelling". As a part of the NCRE cooperative research project concerning teacher behavior in the language arts, a literature survey was made to locate studies describing the behaviors of teachers during spelling instruction. The search was limited to studies reported during the period November 1966 to November 1971. Applying the selection criteria of the total project, no studies were found that clearly specified teaching behavior during spelling instruction. Spelling studies generally continue to be concerned with (1) the nature of the orthography, (2) learner variables, or (3) instructional method. While a comprehensive understanding of what constitutes effective spelling instruction must take these factors into account, teacher interaction with pupils during spelling instruction also needs to be accounted for. The effect of teaching behavior upon pupil achievement in spelling appears to be at least one factor warranting future study.

"Implications of Research Studies in the Teaching of Writing" will be presented by Eileen Tway, Miami University, Oxford, Ohio. The search for studies of teaching behavior in the area of (elementary school) writing revealed very few with documented evidence of actual teaching behaviors. Most studies were concerned more with methods or approaches than with teaching behaviors involved in approaches. The abundance of approach studies and the lack of studies on what the teacher does to implement a given approach no doubt reflect the ease with which the former can be undertaken compared to the difficulty of the latter. There is an obvious need for criteria for analyzing what the teacher does in teaching writing. Another difficulty faced by researchers is that of evaluating writing. Better measuring instruments are needed so that researchers will know how much success has occurred as a result of specific teaching behaviors. Finally, there is a need for better coordination of research efforts, so that the research in teaching behavior and composition will have wider scope and broader implications for the elementary school program.

"Teaching Effectiveness in the Language Arts" is the topic of H. Alan Robinson, Hofstra University. During the past decade, interest in teacher behavior has caused the proliferation of observation techniques and studies on both teachers and students in their interaction in a classroom. A number of studies (Flanders, Rosenshine, Medley, etc.) have been concerned with viewing pupil-teacher interaction during instructional sequences, but few have focused on such interaction during the teaching-learning of specific language arts lessons. Those that did, essentially in reading (Furst and Amidon, Harris, Browne), provided interesting insights but did not establish relationships between interaction and pupil success. There appears to be a need for language arts studies, such as a recent one by Frizzi, utilizing and interrelating Mitzel's three classifications for criteria of teaching effectiveness (product—measure of student growth; process—social interaction of pupils and teachers; presage—such predictors of teaching effectiveness as teacher traits and successes on paper and pencil tests, etc.).

15.19 TEACHING EFFECTIVENESS (C)

Measuring Teacher Effects on Pupil Achievement

DONALD J. VELDMAN and JERE E. BROPHY,
The University of Texas at Austin

Four successive years of Metropolitan Achievement Test scores for all second- and third-grade pupils in a large Southwestern urban school system were used to compute mean residual gain scores for 170 teachers who taught during the three focal years. Alternate regression models were compared for precision in estimating the magnitude and consistency of teacher influence on pupil achievement. Consistency was

examined across MAT subtests, pupil sex, and the three focal school years. Thirty-one of the most consistent teachers were intensively studied with self-report instruments and classroom observations.

Low-Inference Observational Coding Measures and Teacher Effectiveness

JERE E. BROPHY and CAROLYN M. EVERTSON,
The University of Texas at Austin

Thirty-one second- and third-grade teachers were selected for study because of their consistency across three years in producing gains on the Metropolitan Achievement Test in their students. The data consist of scores derived from a revised and expanded version of the Brophy-Good Dyadic Interaction Observation System, a classroom interaction analysis instrument yielding a variety of measures derived from low-inference, presence-absence coding of discrete teacher and student behaviors. Correlations between these behavioral measures and the measure of teacher success in producing student gains will be presented and discussed.

High-Inference Behavioral Ratings as Correlates of Teaching Effectiveness

CAROLYN M. EVERTSON and JERE E. BROPHY,
The University of Texas at Austin

Several high-inference ratings were made on a sample of 31 second- and third-grade teachers selected for study because of their consistency in producing student gains on the Metropolitan Achievement Test over three successive years. Data consist of scales, checklists, and percent estimates filled out by coders after or during classroom observations of the selected teachers. Both intra- and inter-rater reliabilities will be reported. High and low correlations between these measures and a measure of teacher effectiveness in producing pupil achievement gains will be presented and discussed.

Personal Characteristics Associated with Effective Teaching

ROBERT F. PECK and DONALD J. VELDMAN,
The University of Texas at Austin

Objective scores and judges' ratings, both based on a complex personal assessment battery, were correlated with a pupil-gain criterion of teaching effectiveness and with a number of observationally derived measures of classroom teaching behavior. Twenty-seven primary teachers were studied who had demonstrated consistent patterns of pupil gain over the previous three years, varying substantially in the degree of gain achieved. The relationships of the assessment-based measures to the teaching effectiveness measures are described. In addition, the objective assessment scores and the judgmental ratings are compared in their predictive power.

How Teachers View the Effective Teacher

JOSEPH R. JENKINS, New Mexico State University, and
R. BARKER BAUSELL, University of Delaware

In order to determine how teachers view various criteria of teacher effectiveness a survey instrument was constructed using Mitzel's categories (Product, Process and Presage) for teacher effectiveness criteria. Criteria, generated from each of the three categories, and numbering 16 were rated for importance by a random sample (N = 264) of Delaware teachers and principals. Teachers and principals rating correlated highly (.94) indicating consensus on important criteria. Process criteria were rated highest, followed by product and presage criteria. Amount students learn was rated only as 11th in importance behind such criteria as rapport, flexibility and personal adjustment. The data are discussed in light of their implications for accountability.

15.24 TEACHING STRATEGIES FOR HANDICAPPED (C)

Training of Perceptual Motor Skills in Minimally Brain Damaged Children

HILDA R. GLAZER and DAVID L. COX,
Rutgers University

The pursuit rotor was utilized to train eye-motor coordination in minimally brain damaged children. Thirty Ss, ages seven to ten, were matched on relevant variables and assigned to a control or experimental group, the latter receiving eight daily sessions of practice on the pursuit rotor. As measured by pre and posttests on the Bender, the frequency of errors decreased significantly for the experimental group, indicating transfer from the tracing task to the copying of Bender figures. The evidence suggests that a program incorporating practice on gross motor tasks may improve coordination of finer visual-motor activities, including drawing and writing.

The Effectiveness of Textbook, Individualized, and Pictorial Instructional Formats for Hearing-Impaired College Students

HORACE N. REYNOLDS and RICHARD F. ROSEN,
Gallaudet College

The purpose of this study was to compare Textbook (narrative), Individualized, and Pictorial instructional formats in terms of information comprehension and retention. Subjects were 52 hearing impaired college students randomly divided into three groups, each group receiving one of the three formats. Subjects were given a pretest followed by a session for reading and studying the instructional packages. A posttest to assess comprehension and retention was administered on the following day. Results showed that the posttest scores were significantly higher for the Pictorial format than for the narrative Textbook format. These results demonstrate the importance of the pictorial channel for presenting information to hearing impaired students.

Aptitude-Treatment Interaction Research with Learning-Disabled Children

JAMES E. YSSELDYKE,
The Pennsylvania State University

The efficacy of an aptitude x treatment interaction design for research seeking to identify differential educational payoff of prescriptive programming based upon aptitude information is investigated. Four ability measures and one achievement measure were administered to 126 first-grade children. Three curricular interventions were analyzed using ANCOVE in an ATI design. Curricular interventions did not interact with aptitudes; results were due primarily to a Hawthorne effect. Reasons for failure to obtain significant disordinal ATI's are discussed.

Investigating Aptitude-Treatment Interactions

LESTER MANN and BARTON B. PROGER,
Montgomery County Intermediate Unit, and
LAWRENCE H. CROSS,
National Regional Resource Center of Pennsylvania

The success of ATI studies has been quite limited in a criterion referenced measurement framework. One "aptitude" variable of par-

ticular interest in Special Education has been auditory-visual modality preference. Some of the ATI literature in this area is reviewed and critiqued methodologically. The results of this study are then discussed which indicate the fallacies of using standardized test data as the aptitude dimensions of ATI studies. It is argued that more valid aptitude information for ATI research will emerge from a composite of repetitive measurements of a CRM type.

15.25 READABILITY AND READING MATERIALS (C)

An Alternative to Readability Measures: Judging the Difficulty of Childrens' Trade Books

DOUGLAS PORTER and HELEN M. POPP,
Harvard University

A set of 80 childrens' trade books was ranked by seven judges, and the results compared to independent criterion data obtained from cloze versions of the books. Procedures were devised to make it possible for the judges to rank order the entire set of 80 books without information and memory overload. Training procedures with an independent set of 10 books took 90 minutes. Results correlated .86 with cloze data and .96 with informal ranking of the books. Reliability of rankings was .98 for the five competent judges. Results suggest further application to educational practice and readability research.

Comprehension Objectives Derived by Linguistic Analysis of Primary Level Reading Materials

DAVID W. BESSEMER and LAILA FIEGE-KOLLMANN,
Southwest Regional Laboratory for Educational
Research and Development

The stories in a beginning reading program were subjected to a detailed syntactic analysis. New syntactic structures of gradually increasing complexity occurred at a fairly constant rate in successive stories. Relations between new structures and similar structures in prior stories can be used to define comprehension objectives in terms of discrimination between sentences differing by one new syntactic feature. With existing materials, a strategy for comprehension instruction can be based on new words and structures in each story. Pre-story instruction should insure understanding of features new to reading, while post-story instruction can deal with more complex forms of comprehension.

Analysis and Improvement of Reading Comprehension with Task-Oriented Prose

RICHARD KAMMANN, Bell Laboratories

Open book tests of comprehension for an instructional text revealed a baseline error rate greater than 50% with over half the errors being unique. Analysis of the errors located the difficulty in a large number of implicit inferences needed to decode the multi-purpose instructions for specific tasks. The error rate was cut by at least half when inferential operations were reduced through the use of a flowchart format and extraneous information was reduced by customization. Further studies of implicit logical inferences are recommended to clarify the mechanisms of reading comprehension.

The Differential Measurement of Visual Reading Difficulty

PETER DUNN-RANKIN, University of Hawaii

This paper reports initial results in the development of an inventory to measure visual reading difficulties, the Word Preference Inventory (*WPI*). The subject chooses between pairs of stimulus pseudo-words, the one most like a given target word. An analysis of responses to the WPI from 676 children in grades K-6 and of 101 university students reveals meaningful and homogeneous subsets of items which act as reliable indicators of children who are poor readers. A developmental process, which can be ascribed to reading words, interacts with response choice, however, so that discriminating subsets of items vary across grade levels. At any grade level, however, one or more subsets of items can be scored which selectively discriminate poor readers.

Readability and Its Effects on Reading Rate, Subjective Judgments of Comprehensibility and Comprehension

ESTHER U. COKE, Bell Laboratories

Prose passages read aloud or silently were rated for pronounceability and comprehensibility. The relationships of text-derived readability indices to reading rate, comprehensibility ratings and comprehension-test scores were explored. Reading rate in syllables per minute was unrelated to readability. The high correlation between rate in words per minute and readability was attributable to the syllable-rate constancy. Consequently, syllable rate appears to be the more prudent measure for research relating readability to rate. Comprehensibility ratings and comprehension-test scores were moderately correlated with the readability indices. This finding underscores the need to isolate additional text-derived predictors of readability.

15.26 THE TESTING OF BLACK STUDENTS (See p. 150)

15.27 SURVEY FEEDBACK IN EDUCATIONAL ORGANIZATION DEVELOPMENT (A, SYMPOSIUM)

ROBERT J. COUGHLAN and ROBERT A. COOKE,
Northwestern University, Organizers

Various approaches to organization development have been used to increase the effectiveness of educational systems. Contemporary change-producing interventions incorporate multiple approaches which range from person-changing to structural modification strategies. An important component of many OD interventions is data or survey feedback, a process which involves the systematic collecting and reporting-back of information related to various aspects of the organization's functioning.

The purpose of this symposium is to present selected applications of survey feedback for organization development. Our specific objectives are: (1) to bring together recent theory and empirical research on survey feedback in both educational and non-educational organizations; (2) to focus on alternative approaches to the survey feedback process itself, including various means for collecting, presenting, and using the data; (3) to present some interventions which have employed survey feedback in conjunction with other OD components such as problem solving, sensitivity training, and structural modifications; and (4) to provide for a discussion focusing on varying interpretations of the survey feedback process.

Richard A. Schmuck, University of Oregon, will discuss "Incorporating Survey Feedback Into OD Interventions." One meta-goal of organization development is to help the participants establish appreciation and skill for using objective data about themselves for organizational problem-solving and decision-making. The prominent method for soliciting and sharing such data has been survey feedback. Since the most poignant, and therefore most impactful, data seem to be revealed in the midst of training through verbal, face-to-face conversation with the consultant and one's colleagues, there is need for finding ways of incorporating survey feedback into the natural ebb and flow of OD training. This paper describes ways in which data from questionnaires, interviews, and observations can be employed at various stages of training to move participants along. Examples of how data feedback actually has been incorporated into OD projects are also presented.

Each of these examples indicates how survey feedback can take its place as an integral and natural part of a larger macrodesign for organizational development in schools.

Clayton P. Alderfer, Yale University, will discuss "A New Design for Survey Feedback." Survey feedback is a social technology without much theory to offer alternative design strategies or to explain why it works when it does. The present study presents a theoretical discussion analyzing and explaining the use of group methods in feeding back diagnostic data to organizations. A new design—the peer group-intergroup model—is presented and compared to the traditional family group model. Data evaluating one implementation of this design showed that it was associated with senior officers of a bank changing their attitudes toward the relevance of a diagnostic study and their willingness to consider changing their own behavior. Changes in organizational practice also followed the feedback. An explanatory model for the new design, derived from the general theoretical considerations, was supported by data taken from the feedback sessions.

Robert A. Cooke and Robert J. Coughlan will discuss "Survey Feedback and Problem Solving with Complementary Collective Decision Structures." Survey feedback and problem solving processes can be applied to increase the effectiveness of task-oriented structural approaches to educational organization development. One such approach involves the superimposition of complementary collective decision structures over the existing authority decision framework of the school. Collective decision structures potentially increase organizational flexibility and adaptability by providing for problem identification, solution generation, and change initiation at the faculty level. Survey feedback acts to initiate collective decision processes by providing an objective base for problem and need identification. Task-oriented problem solving sessions provide for problem analysis and solution generation; the collective decision configuration facilitates innovation legitimation and implementation. This paper presents a theoretical model for survey feedback—problem solving—collective decision interventions in educational systems. Factors hypothesized to account for the effectiveness of collective decision processes are noted and the proposed change-supporting structure is analyzed in terms of primary structural dimensions.

Coughlan and Cooke will also discuss "A Survey Feedback and Collective Decision Intervention in Elementary Schools." This presentation reports on the results of an action-research project designed to assess the impact of survey feedback and problem solving on school effectiveness and teacher work attitudes. Twenty-four elementary schools in northwestern Illinois were randomly assigned to four treatment conditions: SF-PS which incorporates teacher collective decision structures; SF only; pretest-posttest controls; and posttest only controls. Elected faculty members were trained to lead the SF-PS sessions, provided a standardized survey questionnaire for feedback including inter-organizational comparisons, and assisted in establishing new structural configurations in the full treatment schools. Interview data and documentary evidence indicated that the OD treatment had its greatest effect on school organization structure, faculty problem solving, and teacher work attitudes. To a lesser extent, the program brought about changes in organizational tasks but did not increase the adoption of externally-generated innovations. Questionnaire data also indicated that significant favorable changes occurred in the attitudes of teachers toward various aspects of their work environment.

Daniel M. Callahan and Dale G. Lake, State University of New York at Albany, will discuss "Changing a Community College." During the academic year 1970-71 a major organization change effort was undertaken in a community college in the New York State system. This change effort represents a unique combination of three organization development techniques—survey feedback, diagnostic workshops, and systematic problem solving. Survey feedback was aimed at total organization change—the data collected focused on organization-wide problems. The diagnostic workshops focused on the problems and, consequently, change within significant decision making sub-systems of the larger organization. The data gathered in the survey and in the diagnostic interviews were dealt with by means of the systematic problem solving approach.

One of the design characteristics of this project was to develop within the staff of the college the capacity for continuing the organization change effort—we wanted to build in a self-renewing capacity. As a function of this design feature, the results of the organization development program are still coming in. Thus, in this paper we will describe some of the major changes that have taken place to date and some which are anticipated in the future. Finally, the implications of this approach to organization development in education will be discussed.

Albert F. Siepert and Rensis Likert, Rensis Likert Associates, Inc., will discuss "The Likert School Profile Measurements of the Human Organization." Large-scale research in industrial organizations has shown that Likert's System 4 can achieve 20% to 40% better performance than average, and greater employee satisfaction. Special survey instruments have now been prepared, tested, and revised for measuring the administrative system used by any school or school system. These forms measure not only the administrative system, but the leadership styles, the interaction processes, and the resulting motivation and behavior. Forms are available for School Board Members, Superintendents, Central Staffs, Principals, Teachers, Counselors, Students, and Parents.

The school questionnaires are being used now as organization development tools in providing feedback data in various school systems using the System 4 model as a guide. The forms contain "mirror-type" questions which measure the same behavior or reactions viewed from different respondents, such as the level of supportive behavior as seen both by the superior and the subordinate. Discrepancy scores between the actual behavior and the System 4 model and between the superior's and subordinate's descriptions can yield insights and motivation that result in greater personal and organizational effectiveness in school environments.

15.28 THE IMPACT OF EVALUATION ON FEDERAL DECISION MAKING (A, SYMPOSIUM)

MARVIN C. ALKIN, UCLA, Organizer

Evaluation is becoming increasingly important in the development of federal social policies and in the management of federal social programs. Evaluative findings are inteded for direct use in proving the quality of federally funded programs. Yet a review of evaluative experience suggests that evaluation results have not exerted significant influence on program decisions. One reason may be that evaluation findings do not match the information needs of the decision makers or may not be relevant to the level of the decision maker who receives them. Moreover, evaluation results may be ambiguous, lacking clear implications for future programming.

Better knowledge of what kinds of evaluation have an impact on decision making, and under what conditions, is needed to encourage more effective development of evaluation endeavors. The intent of this symposium is to review the decision-making utility of evaluative information at the federal level in several situations, reflecting a spectrum of perspectives.

"Comments on Evaluation Impact: A Federal Perspective" will be presented by John W. Evans of the U.S. Office of Education. During the past few years there has been an encouraging increase in the use of evaluation in federal programs. In Congress and its governmental agencies this growing interest in evaluation is exemplified by the mandating of evaluations in federally sponsored programs and the establishment of the Planning, Programming, Budgeting System within all federal departments and agencies. Nevertheless, we are still in a

developmental period with respect to the actual utilization of evaluation findings. We have not yet reached the point where one can inspect a variety of important federal decisions and argue that they were made on the grounds of an empirical evaluation. There will always be cases in the federal government in which Congressional and political decisions play both a contradictory and overwhelming role in federal decisions. Yet there is a strong argument for emphasizing evaluative research in social programs, particularly when the results of social programs are not obvious.

Ilene H. Bernstein of the University of Minnesota and Howard F. Freeman of Ford University will discuss the topic:" "Should Evaluation Researchers in Education Have an Inferiority Complex?" Evaluation has been received by social scientists and administrators alike as the critical step required for the identification and implementation of action programs that are both effective and within the resources of the country. Very little is known about the actual evaluation process, its management methodologies and its impact. A national survey was conducted at Russell Sage Foundation by the authors of all federally funded evauation studies in the human resource area. Studies were included if they were initiated in fiscal 1970 and had a budgetary allotment of $10,000 or more. The findings of this survey will be described. Comparisons are made with respect to both process and impact evaluation between investigations in education and those in other fields such as health, income security, public safety, welfare, etc. In addition to comparing the characteristics of education studies to those of others, data on the organizational arrangements under which the evaluation is carried out and the characteristics of the researchers are presented by field.

"The Impact of Evaluation on Title VII Federal Management" will be discussed by Marvin C. Alkin of UCLA. Each year over 50 billion dollars is being spent on education in the United States, the majority of these monies emanating from agencies within the federal government. Paralleling this growing concern with public education, evaluation is assuming an increasingly prominent role in the management of federally-funded programs. However, little evidence is yet available to attest to the impact of evaluation on federal decision making. In order to assess the utilization of evaluative information in situations involving federal decision making, the Center for the Study of Evaluation investigated a sample of projects funded under Title VII, ESEA (bilingual education). This selection was based on the diversity of projects funded under Title VII, and the requirements that each project be evaluated as well as provide for independent educational accomplishment audits. Relationships between the kinds of information and formats of presentation found in evaluation and audit reports and their utility for federal decision making will be discussed.

Bayla F. White and Joseph S. Wholey of the Urban Institute have chosen as their topic, "The Role of Evaluation in Title I (ESEA) Program Management." Not only is the Title I Elementary and Secondary Education program the largest single source of federal support for elementary and secondary education, but it is also the grand-daddy of federal education evaluation activities. Evaluation of programs funded by Title I is required by statute at all three levels of program administration—federal, state and local. Each year, hundreds of thousands of pages of "evaluations" are produced which describe, analyze or criticize Title I activities. The presenters will analyze the impact of all this evaluation on the Title I program, and go on to discuss what kind of impact evaluation can and should have on Title I.

16.01 ELITES AND EDUCATION IN WESTERN EUROPE (F, SYMPOSIUM)

JOHN WEISS, Harvard University, Chairman

This symposium deals with recent research concerning the relationships of higher education to the recruitment and formation of various elites—business, administrative, professional, intellectual, scientific-technical—in Western Europe since the latter part of the 18th century. The emphasis will be upon comparative analysis; panelists will deal with the national differences in the corporate, social role, and ideological orientations of elites during their transition to the modern industrial context.

16.02 FILM AND CONTEMPORARY HISTORY (F, SYMPOSIUM)

JOHN E. TALBOTT, University of California, Santa Barbara, Chairman

This discussion takes as its starting point the film produced by one of the participants, Professor Seymour Drescher of the University of Pittsburgh. Ensuing commentary will take up considerations of the film as an educational instrument, the specific situation of university youth in Paris, 1968, the literature related to the confrontations and the experience in Paris vis-a-vis concurrent university upheavals.

17.02 COST EFFECTIVENESS ANALYSIS IN EDUCATION (H, SYMPOSIUM)

DONALD D. ROGERS, University of Texas at Austin, Chairman

Systems Analysis for Program Planning and Cost Effectiveness. John P. van Gigch, Richard E. Hill, California State University at Sacramento. A systematic process of developing programs and program alternatives which can be used to compare the value of the various alternatives is outlined. The authors use their model as a basis to judge and debate the non-quantifiable merits of the program alternatives. The systems approach and cost effectiveness provide a practical methdology to the design of school programs. The cost effectiveness framework leads to the choice of district programs which satisfy the goals and objectives of all the participants in the educational process.

Cost Effectiveness Analysis in the Development of Mediated Instructional Modules. Donald D. Rogers, University of Texas at Austin. The desire to provide high quality instruction to an increasing number of students while maintaining or reducing costs has led to the development of mediated instructional modules. A model which is used to predict the costs of using various alternate media to achieve the same instructional objectives for the same student population in order to determine the least cost method of instruction is described. The model, which is designed primarily for higher education, is based on the assumption of equal effectiveness for each alternative and focuses on the developmental, operational, and revisional costs of the instructional modules.

Decision Levels: A Neglected Factor in Cost-Benefit Analyses. William J. Gephart, Phi Delta Kappa. Failure to consider decision levels other than those of the institution is the oversight most often apparent in writings on cost effectiveness. It is an oversight that is also observed in some educational applications of the technique. Failure to recognize levels of decisions leads to the collection of inappropriate and inapplicable data. Until the differences in decision levels and the constraints these levels impose on decisions are recognized, and until information-generating techniques are applied after decision settings are described, cost-benefit analyses will lead educators in directions having unforeseen, debilitating side effects.

Evaluation and Cost Effectiveness Analysis. John R. Bormuth, University of Chicago. In order to perform a cost effectiveness analysis of an instructional program, all the outcomes of instruction must be assessed. First, this requires the enumeration of all behaviors that can be acquired as a result of exposure to instruction. Second, test items must be constructed to evaluate these behaviors. The test item

construction techniques must permit the derivation of items in a mechanical and reproducible manner. However, a theory of test item constuction has not been developed sufficiently to perform such a task. Since cost effectiveness analysis requires such a theory, the practical use of cost effectiveness is severely limited.

17.05 ECONOMICS OF EDUCATION: EQUALIZATION, PRODUCTION, AND IMPACT (A)

A Longitudinal Study of Fiscal Equalization in Illinois

G. A. HICKROD, R. CHAUDHARI, J. HOU, and V. GARAGON

Fiscal data was analyzed for a nine year time series (1963-1971) for all school districts in Illinois. Two hypotheses were tested relative to two different definitions of equalization, i.e., "permissible variance," and "fiscal neutrality." Support was given to the notion of increasing interdistrict equality relative to expenditures and tax effort. Support was also given to the hypothesis that grants-in-aid have done little to change the proportion of total funds available to the poorer students of the state.

Identification of an Educational Production Function By Experimental Means

WILLIAM T. GARNER, Northwestern University

Eighth-grade students studied matrix algebra in three programmed lessons. Students were randomly assigned to three criterion performance levels. Student achievement, ability, time spent, and other measures were obtained. Minimal variance criterion performance levels, analogous to production isoquants, were attained. A Cobb-Douglas (log-linear) function was estimated by regression, with output (criterion levels) exogenous and time to mastery as dependent variable. Use of the function to predict time required for various student ability and performance combinations is illustrated. Costs and implications for equity/efficiency decisions in school management and finance are discussed under various assumptions.

Accountability in Compensatory Education

MAUREEN A. SIE, ALVIN R. VOELKNER, ALLEN A. AHOLA, and DAVID L. DONOVAN, Michigan Department of Education

This paper is a report of an evaluation study conducted on Michigan's state funded compensatory education program. For the 1971-72 school year, the legislature appropriated $22,500,000 in an effort to raise the achievement levels of disadvantaged children in reading and mathematics. Approximately 112,000 kindergarten through sixth grade pupils in 67 districts were served under the program. Pretest and posttest data were collected on every pupil, as well as other related information. Statistical analyses identified successful and unsuccessful programs among the districts and across grades, and among schools and across grades.

17.06 SEX-ROLE DEVELOPMENT AND SEXISM (E)

The Effects of Modeling on the Development of Sex-Role Behaviors in Children

CANDACE S. GARRETT, Indiana University

The purpose of this investigation was to examine the effects of modeling on sex-role development in first-grade children. It was hypothesized that when male-female pairs of children observed a male-female pair of models each child would probably shift his sex role behavior toward that of the like-sex model. Sixty children served as subjects. The results did not support the hypothesis. The data supported the opposite effect: each child imitated the actions of the opposite-sex model. These results are explained in terms of identification, rather than modeling, theory.

An Investigation of the Elements of Sexism in Public Schools

MYRA SADKER, University of Wisconsin-Parkside

The research objectives were to identify and analyze the prevalent forms of sexism in elementary and secondary shcools. The methodology involved comprehensive analysis of the psychological and educational literature pertinent to a thorough review of sexism in schools (originally conducted for a coauthored book, *Sexism in School and Society*, to be published by Harper and Row, March, 1973). The research disclosed the following major elements of sex bias in public schools: (1) curricular materials, (2) staffing, (3) teacher-pupil verbal interaction patterns, (4) counseling, (5) segregated activities. A series of studies demonstrating the loss of potential which occurs as females proceed through school were also reviewed.

Sex, Politics and Personality: A Multi-Dimensional Study of College Students

J. GORDON NELSON, FRANK H. FARLEY, and WILLIAM C. KNIGHT, University of Wisconsin, Madison

Recent years have witnessed a marked increase in attention to psychological, physiological and demographic factors in human sexuality. However, the study of individual differences and personality sources of variance in sexual attitudes and behavior has not been extensively pursued. Two hundred undergraduate students (100 males, 100 females matched on age and school year) living in dormitories were administered measures of sexual attitude and behavior, individual differences in stimulation-seeking, personality, and political orientation (liberal-conservative). Factor analysis, using the Harris interpretation strategy, was applied to the data. Clear sexuality factors, with generally little contribution of the personality and political-orientation variables, were obtained.

17.07 STATISTICS (D)

Survey of Some Useful Applications of Sign Test in Educational Research

DARSHAN SACHDEVA, University of California

The sign test is perhaps the simplest nonparametric procedure comparable to the commonly used parametric t-test. This test is easily applied which makes it useful for preliminary analysis and for the analysis of data of passing interest. A large variety of its applications to education research, usually not found in the standard text books, is included in this presentation. In addition, the computing work is kept at an absolute minimum and a minimal use has been made of tables for significance testing.

The Harmonic Mean and Kramer Unequal n Forms of the Tukey Statistic

H. J. KESELMAN, University of Manitoba; LARRY E. TOOTHAKER, University of Oklahoma; M. SHOOTER, University of Manitoba

The harmonic mean and Kramer unequal n forms of the Tukey multiple comparison statistic were investigated for the empirical probability of a Type I and Type II error. The Monte Carlo estimates were generated under conditions of assumption violations for varying numbers of treatment levels when the true magnitude of deviation from the multiple comparison null hypothesis was considered. The Kramer procedure is recommended since it is less sensitive to assumption violations.

An Index of Predictive Efficiency

DAVID J. KLEINKE, Syracuse University

An index that reflects the accuracy of selection associated with a predictive validity of r is presented. Based on Sheppard's theorem on median dichotomies, it is a measure of improvement over chance assignment to "accept" (or "reject"). Because the index is a measure of the accuracy of this assignment, rather than of variance throughout the distribution, it is deemed to be a more appropriate measure than r^2 or indices based on r^2 when the purpose of testing is selection. Comparisons with other indices are made, and empirical data utilizing non-normal distributions and other-than-median splits are presented.

An Empirical Comparison of the Accuracy of Selected Multivariate Classification Rules

CARL J. HUBERTY, University of Georgia;
PAUL J. BLOMMERS, University of Iowa

This study involved two phases: (1) classification based on the calibration sample, and (2) classification in a cross-validation setting. Computer generated data were used. Results obtained from rules based on probabilities of group membership were compared for accuracy when classifying in the discriminant space and in the predictor variable spaces. In the first phase accuracy was greater in the predictor variables spaces, while the reverse was true in the second phase. In general, rules based on probabilities of group membership were approximately equally accurate, and more accurate than a rule related to a multiple regression analysis. Other findings are also discussed.

Estimation of Intervention Effects in Seasonal Time-Series

VICTOR WILLSON, University of Colorado

A model for the integrated moving averages process of order one, IMA (1, 1), having a seasonal (cyclic) component is presented. The model incorporates a parameter for possible change in level of the process after intervention, following methods developed by Box and Tiao (1965), and Glass, Willson, and Gottmann (1972). Least-squares estimates and associated significance tests for the parameters of the model (in particular, the intervention parameter) are derived. The results of a computer study and an example from real data are given with analysis and interpretation of parameter estimates. Results of the theoretical derivation are extended to other models [IMA (1, 1) with deterministic drift, multi-component models], and limitations of the model are noted.

17.08 ADMINISTRATIVE DECISION MAKING (A)

Feelings, Confrontations and Double Messages: A Re-examination of the Effects of Organization Development Interventions of the Verbal Discussion Processes of a Decision-Making Team in a School System

JOHN C. CROFT, OISE; and ARNOLD J. FALUSI,
York County Board of Education, Ontario, Canada.

Combining seven elements (3x2x2) from the following sentence—A person may (1) *accept*, (2) *reject* or (3) take a *neutral* stance toward the (4) *self* or (5) *other* at the (6) *feeling* or (7) *opinion* level—hypotheses predicted an increase in expressions of Feeling, an increase in Confrontation, and a decrease in Double Message (Accept and Reject) statements. An administrative committee (audio tapes of 13 weekly meetings) which had Organization Development (OD) interventions was compared with one which had not. ANOVA results were not significant until the activities of the OD consultants were considered. The significance of this method of researching OD is discussed.

An Analytical Pragmatic Structure of Procedural Due Process: A Framework for Inquiry into Administrative Decision Making

RONALD W. SEALEY and JAMES E. FISHER,
Southern Illinois University-Carbondale

The study describes the analytical pragmatic structure of concepts and applies this structure to the legal concept of procedural due process. This structure consists of (1) form, (2) purpose, (3) content, and (4) function. Conclusions of the study indicate that the structure of the concept of procedural due process, or any legal concept, is not the same as the structure of scientific or moral concepts; parts of the structure of legal concepts change in accordance with changing social and political norms whereas other parts remain constant. The use of procedural due process in decision making does not guarantee errorless judgment nor does it guarantee a particular procedural requisite.

Participative Decision Making and Perceptions of Organization: Refinement and Test of a Decisional-Deviation Index

JAMES A. CONWAY, State University of
New York at Buffalo

To test the relationship between levels of participation and organizational effectiveness, 166 secondary school teachers completed Likert's *Profile of an Organization* and an adaptation of Belasco-Alutto's *Decisional Participation Scale*. It was assumed that Equilibrium (participating as much as desired) was the most satisfying state, Saturation (participating more than desired) next, and Deprivation (less participation than desired) was least satisfying. This continuum of "Decisional-Deviation" correlated with perceived organizational effectiveness at .21 (significant at .001). The "Decisional-Deviation" modification indicates that over-participation as well as the more frequent decisional deprivation both detract from teacher satisfaction.

17.10 STUDENT RATINGS OF INSTRUCTION (D)

Comparative Judgment Scaling of Student Course Ratings

PETER W. FREY and B. CLAUDE MATHIS,
Northwestern University

An analysis of the literature on teacher evaluation resulted in the construction of a teacher evaluation questionnaire containing items most frequently used in previous studies. A sample of undergraduates who had participated in more than one of a group of four undergraduate course experiences was selected and asked to respond to the instrument. A total of 679 responses were received. A factor analysis of these responses identified four evaluative factors: teacher's presentation, course difficulty, grading procedure, and teacher accessibility. Students were able to differentiate reliably among the four courses on each of the factorial dimensions.

Factor Analysis of an Instructor Rating Scale

FRED WIDLAK, ERNEST McDANIEL, and
JOHN FELDHUSEN, Purdue University

Factor analysis of teacher rating scales has often identified components which focus on the instructor's respective roles as actor and interactor. A total of 208 Purdue University instructors were rated by their students on the Course-Instructor Evaluation form in an attempt to: (1) determine the relationships between specific and global items, and (2) determine the factor structure of the scale with and without the global items (the overall course and overall instructor ratings). The results showed lack of independence between specific and global ratings, and three relatively independent dimensions, actor, interactor, and text-test as factors.

Student Evaluation of Instruction: The Analysis of Discrepancies between Perceived and Ideal Conditions

JAMES R. SANDERS, Indiana University;
MICHAEL LYNCH, Kansas State University

Traditional methods of formally soliciting student reactions to specific dimensions of classroom teaching have often yielded insufficient information. Explicit criteria for interpreting reported survey information have been missing. Furthermore, differences in individual student's referent points have not been considered in analyses. A procedure for the collection, analysis, interpretation, and reporting of sufficient evaluative information about classroom instruction is presented. A descriptive instrument was administered twice to students. The data, which were analyzed using a five-way nested repeated measures design, revealed differential real-ideal discrepancy patterns among instructors and between classes within instructors.

Criterion Referenced Validity of Student Ratings of Instructors

DEAN TOUQ, JOHN FELDHUSEN, and
JON HALSTEAD, Purdue University

The purpose of this research was to assess the criterion referenced validity of student ratings of instructors. A total of 480 undergraduates rated their instructors using a special rating scale designed to parallel the Flanders Interaction Analysis Categories. Expert observers also rated the instructors using the standard form of the Flanders Categories. Mean student ratings for instructors were correlated with expert observers' scores. Significant correlations were found between ratings for four categories. These results were interpreted as revealing some criterion-referenced validity for student ratings.

A Comparison of Two Approaches in Factor Studies of Students Ratings of Courses and Instructors

D. W. CARVER, and PAUL G. LIBERTY, JR.,
Measurement and Evaluation Center, The University of
Texas at Austin

Results of two factor analyses of 3,772 student ratings of engineering courses and instructors, obtained by using alternative step factoring criteria, were compared on the basis of six criteria. Results indicated that the ten factor solution obtained by using a step criterion of accounting for 70-75% of the total variance as opposed to a five factor solution containing only factors having an eigenvalue greater than 1.0 accounted for a higher percentage of the total variance, clarified factor structure, provided more useful information for administrative decision-making, and supported the view that a 1.0 eigenvalue step criterion is unnecessarily restrictive in certain situations.

17.11 RESEARCH METHODOLOGY I (D)

Estimating Total-Test Score Distributions through Item-Sampling—A New Theoretical Appoach

RICHARD K. HILL, JR., Virginia Polytechnic
Institute and State University

A model for multiple choice test-taking behavior is proposed which is different from those presently used for item sampling theory. A new theory is developed, which includes a new concept to facilitate comprehension of item sampling theory, a "number-known" score distribution. A major advantage of the model is that it accommodates data from multidimensional tests. The relationships between the proposed model and established theory are shown. The advantages and disadvantages of the proposed theory are compared to those of other techniques currently in use.

How Many Es Are There?--A Critical Analysis of Problems Concerning Determination of Evaluative Factors of Semantic Differential Scales

PHILIP G. BASHOOK, University of Illinois
College of Medicine; STEPHEN F. FOSTER,
The University of British Columbia

In measuring attitudes by Semantic Differential, bipolar adjective scales with high loadings on an evaluative factor derived by Principal Components Analysis are used typically as unidimensional attitude measures. Komorita and Bass, using conventional statistical techniques, report the discovery of more than one evaluative factor. This paper focuses on four considerations for establishing evaluative factors: concept complexity, eigenvalue cutoff criteria, eigenvalue plot, and conceptual analysis of scale groupings. Komorita's and Bass's data and new data from ratings of six concepts of varying complexity are analysed and discussed. Specific recommendations are made regarding determination of evaluative scales in attitude research.

An Empirical Comparison of Selected Two-Sample Hypothesis Testing Procedures Which Are Locally Most Powerful under Certain Conditions

H. D. HOOVER and BARBARA PLAKE, University of Iowa

The relative power of the Mann-Whitney statistic, the t-statistic, the median test, a test based on exceedances (A,B), and two special cases of (A,B), the Tukey quick test and the revised Tukey quick test, was investigated via a Monte Carlo experiment. These procedures were compared across four population probability models: uniform, beta, normal, and double exponential. Sample sizes of (5,5), (10,10), (20,20), (5,10), and (5,20) were among those used. Results indicate the median test should be considered for distributions which contain outliers. The exceedances tests can be powerful alternatives to more standard procedures if the underlying distributions are platykurtic.

A Critique of the Statistical Analysis of the OEO Experiment in Performance Contracting

EDWARD F. O'CONNOR, Educational Testing Service
and STEPHEN KLEIN, University of California,
Los Angeles

The experimental students in the OEO experiment were generally lower scoring and less affluent than control students. OEO's statistical analysis used a variety of statistical procedures to adjust for the initial differences in the experimental groups. A reanalysis of the data using a chi-square technique demonstrates that the adjusted posttest differences between the experimental groups were biased against the

performance contractors because the differences were not independent of the pretest means. These biases are discussed in terms of differential growth rates, specification error, and errors of measurement. The random assignment of schools to the experimental and control conditions would have avoided many of these problems.

17.12 PROBLEMS IN EVALUATION (D)

Analysis Strategies for Some Common Evaluation Paradigms

ANDREW C. PORTER, Michigan State University

Four common summative evaluation designs are identified, all of which include information on experimental units prior to their receiving that which is being evaluated. For each of the four designs the following analysis options are considered: analysis of covariance using a random covariate, analysis of variance of an index of response including gain scores as a special case, repeated measures analysis of variance, and analysis of covariance using estimated true scores as the covariate. The most appropriate analysis for each design is selected using the criteria of hypothesis tested, statistical power of the test, and assumptions made by the test.

A Problem in the Aggregation of Student Data to the Level of School

J. WARD KEESLING, UCLA

In many circumstances it is appropriate to use the school as the unit of analysis. The variables measured on students must be aggregated to form a mean for each school. However, the means derived from the students sampled in a school will tend to fluctuate around the true mean for the school in a way determined by the within-school correlations among student variables rather than by the between-school correlations. A model is presented which circumvents this problem by obtaining replicate measures for each variable. The model permits estimation of the true between-schools covariance matrix and measurement error variances. An example employing real data is presented.

Undertaking Program Comparisons in Educational Evaluation

JIM W. KUNETKA, LEON P. EDMONSTON,
MURRAY A. NEWMAN, Southwest Educational
Development Laboratory

The notion of comparing in curriculum evaluation is discussed, and some approaches to making comparative judgments about program effectiveness during the formative and summative evaluation stages are examined. Sources of information provided by external and internal program comparisons are described, and a model in which a policy capturing procedure for predicting administrative decisions based on comparison data is advanced. Evaluation methodologies appropriate to comparative evaluation are discussed with support given to a matrix sampling procedure for comparison selection based upon program costs, performance appraisals, and program spinoffs at different points in product development.

Individualized Instruction and State Assessment: The New Jersey Educational Assessment Program

In the fall of 1972, New Jersey initiated a program of statewide and local educational needs assessment. This program will entail, at its inception, statewide testing in the basic skills areas of reading and mathematics. The background and goals of the program are discussed. Among the policy issues confronted in the development of the program are the following: criterion-referenced assessment to meet the needs of individualized instruction versus norm-referenced assessment to satisfy informational needs; participation by educators, students, and the public-at-large; use of correlates of achievement; public and professional informational campaigns, and reporting results. Each issue is considered in some detail.

Methodology for Group Comparisons Derived from Objectives-Based Instructional Programs

DAN G. OZENNE, SWRL

Methodology appropriate to the differentiation of individual differences is inefficient where the comparisons of interest are between groups. This paper suggests the use of multiple matrix sampling techniques as a more appropriate and efficient methodology for making between group comparisons. The conventional analysis of data derived from such techniques is extended from the prediction of population distribution parameters to the generation of test norms. These norms provide a convenient and straightforward method for making between group comparisons. The proposed methodology is illustrated through the use of the results from a simulation study.

17.14 FOUR PROVOCATIVE RESEARCH REPORTS FROM 1972 ON MATHEMATICS EDUCATION, K-12 (B, EXPERIMENTAL)

MARILYN N. SUYDAM, The Ohio State University, Chairman

Discussants will offer brief presentations on each report to state a specific viewpoint. The audience will be given concise, one-page outlines of each study. The focus of the discussion will be on the strengths and weaknesses of the research (design, etc.), the interpretation and applicability of the findings, and what the teacher and/or the researcher might do as a result of the study. The intent of the session is to get the audience involved in the discussion of research and to raise and answer questions relating to factors of concern in evaluating and interpreting research. Both mathematics educators and other researchers need (1) to evaluate research more critically, and (2) to seek to apply research in the classroom. Participants are D. H. Crawford, Queens University, Kingston, Ontario; Joseph N. Payne, University of Michigan, Ann Arbor, Michigan; and J. Fred Weaver, the University of Wisconsin, Madison, Wisconsin.

17.19 CURRICULUM DECISION MAKING–THEORY AND PRACTICE (B)

A Conception and Case Study of the Teacher as Choice Maker in Curriculum Development

F. MICHAEL CONNELLY, The Ontario Institute for Studies in Education and The University of Toronto

This paper presents a theoretical account of a two year case study of eight deliberating teachers in curriculum development. A conception of the eclectic and problematic habits of mind required by intelligent teacher deliberation and choice is presented. The conception of the teacher role is based on theoretical considerations of the overall purpose of development, the teacher's role in development, and on empirical data obtained in the discourse of deliberating teachers. It is our belief that the results of this study will have educational possibilities for the improvement of curriculum development, for the realization of effective teacher based curriculum planning, and for the inservice and preservice education of teachers.

Translating a Theoretical Curriculum Model into Instructional Decision Making

EDITH B. BUCHANAN, University of California, Los Angeles

This paper describes the process of translating curriculum theory into a school program for young children. It is an inquiry into the usefulness of a curriculum theory in the formulation of goals and the establishment of specific behavioral criteria to be used in their evaluation. Curriculum theory taken from Goodlad's conceptual model provided the theoretical framework. The process of theory translation was guided by John I. Goodlad in weekly sessions with the group of teachers responsible for the educational program in the Early Childhood Phase of the University Elementary School, UCLA.

Curricular Decision Making in Selected School Systems

GARY A. GRIFFIN, Teachers College, Columbia University

A curriculum decision making questionnaire was formulated and administered to 407 school-affiliated persons to determine if the levels of curricular decision making, as proposed by John I. Goodlad, are reflective of practice. Analysis of responses indicates that in the five school systems studied the societal and instructional level decisions are made by persons at those organizational levels but that the institutional level decisions are often made by persons at the other two levels or are not handled systematically by any identifiable person or agency. It was also determined that teachers participate extensively, often unilaterally, in making curricular decisions.

Decision Making at the Institutional Level

ROBERT M. McCLURE, National Education Association

An analysis of data from two studies and reviews of selected literature are used to describe: problems of decision making at the institutional level; those decisions now being made at inappropriate levels according to criteria generated by the data; and alternative forms of decision making, including change strategies.. Data selected for inclusion pertain to the process of faculty adaptation of models for curricular decision making; forms of organization promoting wide teacher involvement in decision making; teacher attitudes about participation; small group norms, levels of commitment, cohesion; and procedures, processes, and products typically used by faculty groups embarking on institutional tasks.

Theory and Phenomena in Curriculum Research: The Curriculum as a Social System

IAN WESTBURY, University of Chicago, and W. LYNN McKINNEY, University of Rhode Island

This paper argues that questions like "What is the curriculum?" and "How can the curriculum be changed?" can be best answered if the curriculum of the school is seen as a social institution and conceptualized in terms suggested by the sociology of knowledge and organizational theory. Such a conceptualization is presented in this paper and then used in an examination of the history of curriculum change in the public schools of Gary, Indiana, 1940-1970. The theoretical approach to the analysis of the dynamics of curricular change in the system selected for the case study turns out to be very robust. These results suggest that curriculum research should give more attention both to the exploration of curriculum change over time and to the utility of systemic approaches for thinking about curriculum development and change.

17.20 THE OPEN CURRICULUM: RECENT RESEARCH (B)

Personality Characteristics and Assumptions Held by Open and Traditional Teachers of the Poor

ANTHONY J. COLETTA, University of Connecticut

This study determined, first, if significant differences existed in personality characteristics and assumptions held about open education between open and traditional primary teachers; and, second, examined the content and construct validity of the Barth Scale using latent-partition analysis and factor analysis techniques. The Edwards Personal Preference Schedule, the Thurstone Temperament Schedule and the Barth Scale were administered to 60 open and traditional teachers, rated high and low by a supervisor. Multivariate analyses of variance were employed. No significant differences in personality characteristics were found; open versus traditional teachers ($p < .05$) and high rated, open versus low rated, open teachers ($p < .05$) differed significantly in assumptions.

The Open Curriculum and Selection of Qualified Staff: Instrument Validation

JOHN F. GREENE, University of Bridgeport, JOSEPH KEILTY, University of Bridgeport and University of Massachusetts, and SHERRAN ROTHMAN, University of Massachusetts

The impact of open education on today's curriculum has been extensive. Of the many requests for research in this area, none is more important than instrument validation. This study examines the internal structure of Barth's Assumptions about Learning and Knowledge scale and explores its relationship to established "progressivism" and "traditionalism" scales and demographic variables. Barth's scale and Education Scale VII were administered to 149 subjects. Item and factor analysis yielded support for Barth's scale. As hypothesized, the scale correlated significantly with Education Scale VII. No relationships were found with the demographic variables considered.

The Effects of an Open Experimental Program on the Attitudes and Self-Concept of Graduate Students

JOSEPH KEILTY, University of Bridgeport and University of Massachusetts, and JOHN F. GREENE, University of Bridgeport

The purpose of this study was to determine what effects on attitude and self-concept arose from participation in the Multiple Alternative Program (MAP), an open experimental approach to graduate education. Six psychologically oriented instruments were administered to 86 graduate students to 2 x 2 ANOVA procedures with one within subject dimension (pre-post) were employed to test each H_o ($\alpha = .05$). The statistically significant findings indicate theat the MAP participants developed a more favorable attitude toward higher education than a comparable control group of regular graduate students. No change was found for real self-concept, teacher self-concept as perceived by supervisor, progressivism, or traditionalism.

A Comparison of Open and Traditional Education: Conditions that Promote Self-Concept

P. TERENCE KOHLER, University of Connecticut

The study tests hypotheses derived from the proposition that Open Education promotes self-concept. The Sear's Self-Concept Inventory, yielding scores in six self-concept "areas," was administered to 316 Ss, ages 9 to 12, from six suburban schools. The Walberg-Thomas Scales rated each school as to degree of openness. No significant difference in any of the six "areas" of self-concept was found between Ss in the Open and Traditional Groups. Significant differences in total self-concept were found between Open Males and Traditional Males, between Open Males and Open Females, and between Open Schools. No correlations were found between a school's openness and Ss' self-concept.

Open Education: A Valuable Pre-School Model?

DONALD L. THOMPSON, University of Connecticut

The purpose of this investigation was to study the differences in cognitive and social development of pre-school children enrolled in a structured Montessori program and those in an open, child-centered program. The sample consisted of twenty children who attended the Montessori for half a day and the child-centered program for the other half a day, and twenty children who attended only the Montessori school for a half day. The results indicated that neither group of children made significant gains on the cognitive measures. On three of nine social development indices, the children who attended the child-centered program made significant improvement (.05 level).

17.22 PERFORMANCE TESTING (D)

Application of Teaching Performance Tests to Inservice and Preservice Teacher Education

W. JAMES POPHAM, UCLA

Teacher educators have been plagued with the problem of devising useful instructional interventions, but often have been unable to assess the quality of their efforts because of the unavailability of satisfactory criterion measures. The application of teaching performance tests as (1) an instructional intervention, and as (2) a formative or summative evaluation criterion in connection with inservice and preservice teacher education programs is described. Applications of the performance test strategy to both types of programs are presented. This measurement strategy has utility for preservice credential programs and inservice staff development enterprises.

Teaching Performance Tests as Dependent Measures in Instructional Research

EVA BAKER, UCLA

The need for common measures in research on teaching is legend, and the merits of teaching performance tests to meet this requirement are explored here. A regression study where teacher performance tests were used as dependent measures is described. Sixty-four subjects were given objective-based lessons to teach. During their lesson, they were rated on the use of six instructional principles. Following instruction, learners were administered a short test of achievement and interest. Step-wise regression analyses were conducted, and variables related to the performance criteria described. Suggested modifications of performance tests to enhance their suitability as dependent measures are discussed.

Psychometric Characteristics of Performance Tests of Teaching Effectiveness

JASON MILLMAN, Cornell University

Teaching performance tests are measures which assess a teacher's ability to accomplish prespecified instructional objectives. Although possessing much face validity, little psychometric information is available about such assessment devices. Three separate studies were conducted to provide information about the validity, reliability, administration, and scoring of performance tests of teaching effectiveness.

19.01 TEACHING COMPETENCY: CAN IT BE ASSESSED? (C, SYMPOSIUM)

BEATRICE A. WARD, Far West Laboratory for Educational Research and Development, Organizer

The objectives of this symposium are: (1) to identify and discuss varied approaches to the definition of teaching competency, (2) to examine the procedures being used to assess competency under each definition, and (3) to explore the feasibility of use and potential contribution of each type of assessment procedure.

When it is determined that teaching is built upon various combinations of observable behaviors, assessment of teaching competency moves beyond submission of a transcript of courses completed. How competency is defined and assessed influences the content and design of preservice and inservice teacher training programs as well as the evaluation of the teacher himself.

At the present time, many questions remain to be answered regarding whether teaching competency can be assessed, and if assessment is possible, how it should be conducted. The presentations in this symposium are intended to present five diverse views on this subject. Each presenter is engaged in competency-based teacher education. The issues raised and the assessment procedures proposed, therefore, emerge from both theoretical and practical bases.

John A. Masla and William Licata, Buffalo State University College, will propose "Model Lessons as Means for Diagnosing and Assessing Competency." The steps toward assessment, reviewed in their presentation include: (1) identification of the teaching variables that can be expected to appear in a particular lesson, (2) development of a system of interaction analysis for verifying the occurrence of the variables, and (3) preparation of profiles of teaching occurring in the lesson. Keeping the assessment task within reasonable limits is viewed as an important requirement for both the assessor and the teacher engaged in the assessment process. A model lesson based upon questioning-discussion competencies is presented as an example of the application of this approach.

Patricia Heffernan-Cabrera and William J. Tikunoff, University of Southern California, will submit the view that in order to effect significant change, competency based teacher training must be congruent with and address itself to the philosophy of the young people—the humanists—who are its clientele. "A Humanistic View of Assessment and Competency Based Teacher Education: I Can Do It Myself, Mother!" holds that men should place their faith in man himself. Of the many powers of man exercised in cooperation with others, self-criticism, the Socratic power, is regarded as the central power. Therefore, it is proposed that meaningful and relevant procedures for assessing competencies include anad are largely determined by SELF-assessment. "To be able to . . ." is the goal, not "to be able to prove . . ." to others. Procedures for accomplishing this goal are to be discussed.

"A Positive-Negative Behavior Index Based upon an Initiation-Response Chain" will be suggested by Roger Pankratz, Kansas State Teachers College. Within this framework, teachers' acts of initiation and response are observed and measured in relation to their objectives of instruction. The potential is considered for defining positive-negative teaching behaviors through use of: (1) available literature, and (2) research investigations of behaviors that appear to be related to specific categories of instructional objectives. Preliminary studies conducted at Kansas State Teachers College are reviewed, and problems met and trend information obtained discussed.

Wilford Weber, University of Houston, will focus on the consequences for pupils of different kinds of teaching competencies in "Let's See What the Kids Think." He will present the view that the most important competencies may be difficult to measure, particularly if these competencies are expected to have some relationship to the achievement of both cognitive and affective objectives of instruction. An assessment procedure which is based upon asking the teacher traineee to create and use instruments which show that his pupils develop more positive attitudes about the trainee as a teacher as a result of interaction with him will be discussed.

Beatrice A. Ward, Far West Laboratory for Educational Research and Development, will comment that research on teacher performance resulting from training in the use of specified teaching skills can serve as an empirical base from which to build standards of performance. "Establishing a Standard of Performance" will review the advantages and disadvantages of using such evidence, and question whether standards of performance have any meaning in a co-operable act such as teaching. Procedures are proposed for obtaining samples of teaching which can be compared with standard performance. Additional research needed to establish the validity of this approach will be discussed.

The symposium will contribute to the resolution of the critical questions of identification and assessment of teaching competency in several ways. First, five distinctly different views as to how competency may be defined will be presented. Second, information will be provided on several assessment procedures that are currently being tested. Third, a variety of research topics that warrant investigation if educational researchers are to begin to answer questions about teaching competency will be proposed.

19.03 PUBLIC BELIEF, COMMUNICATION, AND CURRICULUM CHANGE (B, EXPERIMENTAL)

LOUIS J. RUBIN, University of Illinois, Organizer

The proposed AERA experimental session will deal with the relationship between curriculum change and public belief. The underlying rationale is based upon the thesis that the profession's failure to inform people about educational goals has resulted in (1) a dwindling confidence in the efficacy of the educational system, (2) a growing skepticism as to the usefulness of curriculum change, (3) a gullibility with respect to innovative fads and market-place opportunism, and (4) an increasing discontinuity between the teachings of the home and those of the school. The validated research evidence on the subject is scant, and the intended format—a debate designed to illuminate controversial points of view—should provide important new clues to a promising area of research.

The session will address itself to two primary objectives: a consideration of the public's will as a pressure force for curriculum change and an exploration of alternative ways in which communication can be used to achieve an educationally-informed public—a public able to distinguish between sound and unsound educational practices and one knowledgeable about contemporary goals in schooling.

A study by the Communications Coalition for Educational Change, utilizing a random-sampling, survey design, sought answers to the following four questions about the Dayton, Ohio school system: (1) What educational beliefs and aspirations do each of Dayton's subcultures have for their schools? (2) Through what communication channels are these beliefs and aspirations derived? (3) Can each group's educational beliefs be altered through selected communication efforts? (4) If so, which communication procedures are most effective with each group?

The session's debate will center on the power of public belief and expectation to affect curriculum change and on the profession's responsibility for educating the public about education. It may be, as a case in point, that notions set forth in the popular media are a more potent force for change than reliable research conclusions.

19.04 LARGE SCALE EVALUATION MODELS (B)

Evaluation of an Interuniversity Program in Medical Education

CHARLES W. DOHNER, THOMAS J. CULLEN, PHILIP WEINSTEIN, University of Washington

The regionalization of the University of Washington Medical School represents a beginning in addressing the problem of maldistribution of physician manpower in the states concerned—Washington, Alaska, Montana, Idaho (WAMI). The WAMI experiment uses the faculties and facilities available in the universities of these states to teach first year medical students the first quarter of basic sciences. This paper addresses itself to: (1) describing the philosophy, history, strategies, and activities of the WAMI experiment, (2) identifying the questions that need to be answered by the evaluation process; and (3) progress of the Program and curriculum evaluation to date.

A Model of Curriculum Evaluation Applied to a University Baccalaureate Program

VIVIAN C. WOLF and CECILIA M. SMITH, Institutional Affiliation with University of Washington

A multi-variable curricular model is applied to a total baccalaureate curriculum revision. The objectives of the evaluation, methods, and sources are given. The model can be used to examine how much additional power in decision making was gained by each set of variables in the model.

19.05 RACE AND ATTITUDES (C)

Perception of Racial Cues in Preschool Children: A New Look

PHYLLIS A. KATZ, and SUE ROSENBERG ZALK, City University of New York

The prediction that young children would more readily learn to discriminate faces of their own race than another race was tested. One hundred ninety-two black and white nursery and kindergarten Ss were administered a two-choice discrimination learning task employing either brown, pink-tan, or green faces varying in shades. A doll choice task was subsequently administered, assessing racial and gender preference. The major prediction was confirmed. Performance was related to stimulus condition, age, race of E and race of S. The doll choice task appeared unrelated to learning performance, and did not elicit the strong preference for Caucasian dolls typically obtained. Gender was a more predominant choice cue than skin color.

The Effect of Motion Pictures Portraying Black Models on the Self-Concept of Black Elementary School Children

CHRIS DIMAS, Malcolm X College

The objective of this study was to determine if there was a significant difference in the self-concept among black students who view motion pictures portraying black models and those who view white models. The subjects were grade four and six black students in inner-city schools. Analysis of the data support the following con-

clusions: (1) experimental groups scored higher on Power, Grouping I and Grouping II Constructs than did controls; (2) experimental fourth-graders scored lower on Centrality. It is concluded that black students who view motion pictures portraying black models will indicate certain aspects of the self as being more positive than will those who view white models.

The Effects of a Student Centered Special Curriculum Upon the Racial Attitudes of Sixth Graders

JUDITH W. LESLIE, LARRY L. LESLIE, The Pennsylvania State University, and DOUGLAS A. PENFIELD, Rutgers University

The purpose of this research was to appraise the effects of a comprehensive effort to improve racial attitudes of sixth-grade children. Experimental subjects received enriched curricula and materials, tutored and interacted with black children and attempted to positively influence control group subjects' racial attitudes. The total group showed improvement on all four attitude measures, but there were no significant findings according to treatment or achievement. The net effects of curricular and material enrichment, interracial experience and teaching about blacks, does not appear to outweigh the advantages of peer influence as a mode for improving racial attitudes.

Attitude toward Education, Vocational Maturity, and Control of Environment in Relation to Ninth-Grade Achievement

MARVIN SIEGELMAN, City College of New York

A major finding of the Coleman Report was that pupil attitudes were more strongly related to school achievement than all other measured variables. In the present study, attitude toward school and control of environment, noted in the Coleman Report, were examined in relation to grades. A third attitude concerning vocational maturity was also evaluated. The sample included 394 ninth-grade males, mostly black, from low socioeconomic locations in New York City. Thirty-nine out of 48 partial correlations, controlling for IQ, between pupil attitudes and grades, were statistically significant. The data generally supported the Coleman Report.

19.06 MATHEMATICS LEARNING (C)

Mathematics Learning and the Sexes: A Review

ELIZABETH FENNEMA, University of Wisconsin, Madison

Two recent reviews of research concerned with the learning of mathematics (Glennon & Callahan, 1968; Suydam, 1969) have given credence to the belief that boys perform better than do girls on tests of mathematical reasoning ability. This powerful conclusion is based on an inadequate review of the literature which in reality shows little or no significant differences in mathematical ability between boys and girls until they reach high school. One important reason which has been hypothesized for this difference, i.e. difference in spatial ability between the sexes, does not account for all of the differences found.

Negative Instances and the Acquisition of the Mathematical Concepts of Distributivity and Homomorphism

RICHARD J. SHUMWAY, The Ohio State University

The role of negative instances in the acquisition of the mathematical concepts of distributivity and homomorphism was examined. Two levels of instruction for distributivity (positive instances and positive and negative instances) and the same levels of instruction for homomorphism were crossed to form a 2 x 2 factorial design with 23 undergraduate elementary education majors per cell. Criterion variables were number of correct responses, stimulus interval, and postfeedback interval during treatments and/or posttests. The results for distributivity favored a treatment containing negative instances. The results for homomorphisms suggested a disordinal interaction between levels. Negative instances appear to have a significant role in mathematical concept acquisition.

An Experimental Study of Relationships Between Mastery of a Superordinate Mathematical Task and Prior Experience with a Special Case

AARON D. BUCHANAN, Southwest Regional Laboratory for Educational Research and Development

This study was designed to examine effects of prior experience with subordinate tasks upon mastery of a superordinate mathematical task in circumstances where one of the subtasks is a special case of the superordinate task. A 2 x 2 x 3 factorial experiment involving 72 elementary subjects was conducted with three levels of prior experience and two orders for presenting subtasks examined in interaction with aptitude. Results showed that increasing amounts of prior experience with the special case led to a significant increase in the number of trials required to master the superordinate task. Presentation order and interactions with aptitude were generally not significant.

The Effects of Computer Programming on Performance in Mathematics

STUART MILNER, University of Pittsburgh

Computer programming, using the LOGO language, was taught to fifth-grade students to determine its effect on performance in mathematics. In this context, programming was used as a means towards learning conceptual aspects of mathematics. Tasks involved the generation of sequences and the use of variables. A hypothesis that students could learn the previously unknown concept of variable through programming was confirmed both statistically and observationally. An investigation was also made of the relationship between instructional treatment in learning to program and initial ability. Results indicated that there were no significant effects due to instructional treatment or ability in either training or criterion phases.

Some Factors Associated with Elementary-School Pupils' Performance on Examples Involving Selected Variations of the Distributive Idea

J. FRED WEAVER, The University of Wisconsin-Madison, and MARILYN N. SUYDAM, The Pennsylvania State University

The findings from administering a 20-item pilot instrument (partitioned into four 5-item Tests) to 242 pupils in grades 2-5, indicate that performance is not independent of the distributive form involved in an example, nor of the context or format in which an example is cast. Additional data will be collected from a wider sampling of pupils (grades 4-6 or 7) using a revised instrument, seeking confirmation or rejection of conclusions suggested by the pilot data and leading to implications for instruction pertaining to distributivity within the framework of elementary-school mathematics programs.

19.07 PROGRAM AND PRODUCT DEVELOPMENT (C)

Research in a Nontraditional Setting: Development and Evaluation of an Audio-Self Instructional System

RICHARD S. ANDRULIS, The American College of Life Underwriters

The Cassette Review Program (CRP) is a series of audio tapes and response booklets that provides students with a method to review concepts in each course of the C.L.U. curriculum. The audio cassettes provide information and questions, while the response booklets allow for a participative learning experience between the student and the content material. This investigation used a separate sample pretest-posttest design for two courses of the C.L.U. curriculum. Randomly selected students and teachers were administered knowledge tests on the CRP material. In addition, a questionnaire was included to obtain information on such aspects as relevancy and clarity of the material. Evaluation and analysis is now being completed.

Mathematics of Life Insurance Study Aid Development and Evaluation in a Nontraditional Setting

HAROLD F. RAHMLOW, The American College of Life Underwriters

The emergence of nontraditional educational programs is creating new problems and opportunities for persons engaged in educational research and development activities. A supplementary study aid has been developed in the content area of Mathematics of Life Insurance for adult professionals who study independently or in group situations. It contains objectives, criterion items, expository material and adjunctive programmed materials. The final pre-publicaion evaluation was done on a pretest-posttest basis and evaluated for cognitive, affective and operational variables. In addition, an analysis was made of student responses to items on the national C.L.U. examination.

The Learning Booth—Product Evaluation and Research

NICHOLAS F. RAYDER, Far West Laboratory

The Learning Booth, an eduational product developed and tested by the Far West Laboratory, was designed to offer a young child (at kindergarten or first-grade level) an experience which enables the child to learn to solve problems and find answers independently. Other training materials enable users to set up and operate a learning booth for young children. This study evaluates the learning booth and the training program as educational products, then discusses performance on the learning booth as it relates to ethnicity, intelligence test scores and future reading test performance.

The Effects of Empirical Program Revision and Presentation of Objectives on Student Performance

ROBERT H. SULZEN, United States Army Infantry School Fort Benning, Georgia

The study was designed to test the effectiveness of empirical program revision and the presentation of objectives before instruction through systematic replication. The basic study was replicated nine times. Subjects were randomly assigned to four treatment groups. The control group was given an unrevised program with a placebo objective; another group received the unrevised program and a specific objective; the third group was given an empirically revised program and a placebo objective, and the last group received the revised program and specific objective. Revision was found significantly better than objectives, and objectives were significantly better than control.

19.08 ARTIFICIAL INTELLIGENCE (and SIG/RME)

Artificial Intelligence Models for Human Problem-Solving

GERALD A. GOLDIN and GEORGE F. LUGER, University of Pennsylvania

Current research employing "artificial intelligence" or mechanical models for human problem-solving bears an important relationship to structuralist Piagetian cognitive theory, utilizing the fundamental correspondence between conservation operations and symmetries. Behaviors of 35 adult subjects solving the "Tower of Hanoi" problem are represented by successive paths within Nilsson's "state-space," illustrating the decomposition into subproblems. The data analysis indicates significant invariance of operations across subproblems of isomorphic structure. Symmetry acquisition by a subject during problem-solving corresponds to a mathematical "reduction" of the state-space diagram. A natural distrinction emerges between (Piagetian) cognitive structures and (mechanical) strategies for proceeding within the state-space.

19.09 CURRICULUM DEVELOPMENT: MODES AND MEASURES (B)

Stages in the Design and Formulation of a Composition Program

STANLEY E. LEGUM and EDYS QUELLMALZ, Southwest Regional Laboratory

The paper exemplifies the way in which theoretical and practical considerations interact in the architecture of an instructional product. The design and formulation of a primary level composition program are traced from the description of a conceptual network for composition skills and the formulation of the set of instructional objectives based on the interaction of the conceptual network with practical experience.

An Empirical Examination of Expected and Desired Involvement in Curriculum Planning

GEORGE A. LETCHWORTH and MICHAEL LANGENBACH, University of Oklahoma

The organizational relevance (teacher retention) of involvement in curriculum planning was studied as well as discrepancy between teachers' expected and desired involvement. First-year Bureau of Indian Affairs teachers indicated that they should have more involvement in curriculum planning and the desire for involvement in curriculum planning and the desire for involvement increased as the school year progressed. Surprisingly, however, the teachers who remained for a second year and those who resigned after the first year did not differ in their perception of "what exists" and "what should exist" in the teachers' role in curriculum planning. The results have implications for existing normative statements regarding teacher involvement in curriculum planning.

Structuring a Fine Arts Instructional Program

EDYS QUELLMALZ and ROSEMARY ALLEN, Southwest Regional Laboratory for Educational Research and Development

The design of an instructional program requires analysis of the subject matter into critical content and response categories. This paper

will identify organizational parameters derived from the analysis of the art subject area that may serve as structural classes for the analysis of other subject areas as well. The paper will also describe basic architecture of an art program derived from this analysis.

19.10 CONTRIBUTION OF EVALUATION TO SCHOOL SYSTEM PLANNING (H)

Cost Utility: An Aid to Decision-Making

CRIST H. COSTA, Milwaukee Public Schools

A set of procedures were developed which assist in structuring tasks and objectives in a manner to permit rational decision-making. The model uses a jury of experts to rank various objectives and program processes in terms of their importance. Values are generated which relate to costs in the form of a utility-cost ratio. The model was tested in a small, midwestern urban school district. Various decision-makers were interviewed to ascertain their perception of the utility of the model. The model is extremely practical in terms of ease of use and ability to structure program components into a setting for decision-making.

Management of Organizational Conflict Resulting from Adoption of New Planning-Evaluation Strategies

FREDERICK R. IGNATOVICH, Michigan State University

The growing emphasis on planning and evaluation in educational institutions has resulted in rapid implementation of various strategies. Participant-consultant observations were used to focus on the problems of the implementation. Organizational conflicts were identified and coping strategies were developed by an external agent. Several organizational settings, local school district evaluations, administrative team planning development, and a process evaluation in a flexible modular high school, provided the experience base. Common conflict areas, effective coping strategies, and implications for innovators are discussed.

Design and Use of an Information System to Support School Planning-Evaluation

J. C. LASMANIS, Council of the Great City Schools

The Planning and Management Information System (PMIS) was designed to support large city school district managers in the areas of planning-evaluation, reports generation, and other management functions. The PMIS data base is comprehensive. It contains unaggregated data elements that are interrelated and longitudinal over time. The processing capability of PMIS allows non-data processing personnel to interact directly with the data base through an easy to use English-like language while retaining direct linkage to standard statistical analysis packages. PMIS makes evaluation an integral part of planning and decision making and provides the powerful data base required by PPBS.

Design and Implementation of a Planning Process in a Large Urban School System

DAVID A. BENNETT, Milwaukee Public Schools

The design, implementation, and acceptance strategies of a planning process for a large, urban school system are discussed. Interrelated study documents comprise the vehicles for describing local school and central office planning procedures. The planning design is built on a program budget format and grounded in a management by objectives philosophy. Emphasis is placed on the experiences with and the practical application of familiar planning designs. The efficacy of future educational programming is felt to be dependent upon rational planning systems that provide for the definition and evaluation of educational outcomes.

Planning-Evaluation in a Medium Size School District

ROGER M. GIROUX, Duluth (Minn.) Public Schools

The rationale, operational framework and implementation case study of a planning-evaluation model for a medium size school district are discussed. The system defines a management information function in three components: planning, operations, and evaluation. The relationship between these components is presented in both diagram and narrative form. The skills needed by personnel and the objectives they are to attain are identified. A description is given of the computer based management tools particular to each component.

The purpose of the system is to provide timely and accurate information to educational managers which allows for discrimination between alternative courses of action at any time during program development or operation. The ultimate goal of the system is to relate the benefits of a program to the costs through a well defined and specified plan of operation.

19.12 APPLICATIONS OF THE CSE EVALUATION MODEL TO A VARIETY OF EDUCATIONAL PROGRAMS (H, SYMPOSIUM)

A Case Study of a Statewide Assessment of Educational Priorities. Stephen P. Klein, UCLA. An evaluation was conducted to determine the specific educational objectives that each school district in the state of New Mexico considered most important, and to determine which of these objectives were generally considered most important throughout the state. A representative random sample of 27 of the state's 89 school districts were asked to develop what they considered to be important educational objectives in each of the following four areas: communication skills, mathematics, science, and social studies. Analysis indicated that some objectives in each area were chosen much more frequently than others; There was a common core of objectives throughout the state. Although there were differences between districts in terms of which objectives they felt were most important, there did not appear to be any significant differences among the kinds of raters within a district in terms of which objectives they felt were of the highest priority.

Bakersfield: A Title III Evaluation. Joseph Dionne and James Cox, CTB/McGraw-Hill. During the academic year 1969-1971 a program was introduced into five schools in the Bakersfield City School District involving students in grades K-6. This newly developed program emphasized change in seven areas of school life: (1) language development, (2) mathematics, (3) pre-kindergarten, (4) staff development, (5) parent-involvement, (6) intergroup relations, and (7) auxiliary services. CTB/McGraw-Hill conducted an evaluation, providing information on the extent to which plans were carried out and the results of these activities. For each area of program concern the evaluation team and project staff jointly developed performance criteria. Assessment devices were then selected, emphasizing a variety of different measuring techniques. Frequent progress reports were provided to the project staff detailing implementation of the program as well as progress towards program objectives.

Evaluating a Campus Drug Education Program. Jacqueline B. Kosecoff and Joseph A. Wingard, UCLA/ODE. The Drug Abuse Education Act of 1970 allocated a 58 million dollar expenditure for drug education and prevention programs. Under this act, the United States Office of Education was authorized to support innovative college and university-based drug education projects. In 1971, an undergraduate Office of Drug Education (ODE) was established at UCLA and funded at $43,000 per annum for a two year period. The UCLA ODE project directed its efforts toward improving aspects of the university

experience which might lead students to drug use. A variety of multifaceted programs were developed, including a peer counseling course, drug workshops and symposia, and an administrative-student retreat. An evaluation team consisting of UCLA graduate students was contracted by the ODE project. Implementation and progress information was provided to the student directors for the modification and improvement of ODE programs. Descriptions of student administrative efficiency, staff interpersonal relations, and outcome information detailing results of ODE programs were reported to USOE monitors.

Evaluation of an Experimental Preschool for American Indian Children. David A. Churchman. The Tribal American Preschool was established to find better ways to meet the educational, social, and health needs of American Indian children in central Los Angeles. Ninety children were randomly assigned to one of three modes of instruction. One used team teaching, another Montessori methods, and the third is based directly on the cooperative aspect of tribal culture. An implementation evaluation determined the extent to which important characteristics of each mode of instruction were actually installed, and recommended action to correct important discrepancies between actual practice and the program plan. Progress evaluation provided data which enabled teachers to improve the extent to which objectives were attained by each mode of instruction.

19.14 BEHAVIORAL EFFECTIVENESS OF CHILDREN IN THE CLASSROOM: CONCEPT, APPLICATION, AND IMPLICATIONS FOR REGULAR AND HEAD START-FOLLOW THROUGH CLASSROOMS (H, SYMPOSIUM)

MARSHALL S. SWIFT, Hahnemann Medical College and Hospital, Chairman

The Application of a Behavioral Effectiveness Measure in a Longitudinal Study. Marshall Swift, Hahnemann Medical College and Hospital. A Measurement of behavioral effectiveness in a longitudinal study of children in urban classrooms is presented. The specific nature of behavioral difficulties from kindergarten to third-grade, the stability of behavior patterns over this four year period, the relation between behavioral effectiveness and traditional measures of achievement success, and the use of behavioral effectiveness measures as a means of assessing program impact are discussed. Attention is focused on: (1) the degree to which children become more (or less) effective in coping with classroom demands over their first four years of school, (2) correlates of effective behavior, (3) the degree to which prediction of later success might have been accomplished, and (4) the relevance of such data to programming for children.

The Concept of Behavioral Effectiveness in the Classroom. George Spivack, Hahnemann Medical College and Hospital. The concept of behavioral effectiveness, and why it is important to understand and measure relative to what teachers do and the way classrooms are designed is discussed. Aspects covered include the following: (1) which classroom behaviors relate to learning and how they are organized; (2) the significance of classroom behavior as the first thing that the teacher sees, out of which teacher response may be designed; (3) the possibility that such behaviors reflect response to the total demands of the academic situation, and therefore may be more sensitive to classroom adjustment than achievement or other product measures which may be influenced more by I.Q. and extra-classroom factors.

Behavioral Effectiveness: Implications for the Follow-Through Programs. Milton Goldberg, School District of Philadelphia. Behavioral effectiveness measures for the Follow Through program are presented. Both the means of evaluating the impact of the total program upon children, and the technique are included in the discussion for determining differential impact among various programs. Attention is paid to the relationship between child behaviors and Follow Through model descriptions. Discussion includes the possible use of the behavior measures as a descriptive device to assist program development and understanding of the problems of individual children.

19.18 EVALUATION OF AFFECTIVE FACTORS IN EDUCATION (H)

Problems in the Evaluation of Affective Education: A Case Study

BARBARA J. BRANDES, Research for Better Schools, Inc.

Critical methodological issues in the design and evaluation of programs in affective education are discussed. The uncertain relationship between the short-term and long-range goals of instruction is problematic to evaluation in the traditional subject matter areas, but it is a much more serious predicament for evaluators of education in values and attitudes where little is known about the skills essential to attainment of long-range goals. Procedures being used for formative evaluation of an elementary school program in achievement behavior are presented. These procedures illustrate ways of handling the above problem by allowing for successive shaping of objectives.

Starting Point for Curricular Change: A Predisposition and Suitability Measure for Client Groups

WARREN LACEFIELD and HENRY P. COLE, University of Kentucky

A reliable instrument was developed to assess the value orientations of individuals toward four basic epistemological dimensions concerning the perceived nature of knowledge, the learner and learning activity, and the purpose of schooling. Earlier research has shown these four dimensions discriminate between curriculum materials and instructional roles designed for traditional or process education approaches to instruction. The study reports the development of the instrument and its preliminary use with various groups in determining their predispositions toward using specific educational curricular innovations. The instrument is seen as having utility in matching curriculum innovations to client group needs and values.

Self-Concept of the Disadvantaged Child and Its Modification through Compensatory Nursery School Experience

KATHLEEN TUTA, University of Michigan; GEORGIA PITCHER BAKER, Purdue University

The effects of public nursery school education on the self-concepts of disadvantaged kindergarten and second-grade children were measured by the Pictorial Self-Concept Scale. Four hundred and thirty-four kindergarteners and 67 second-graders took part in the evaluation. The results were analyzed using two- and three-way ANOVAS. Nursery school children had more positive attitudes toward themselves than did non-nursery at kindergarten, but these gains were not observable by second-grade. Since the nursery school program was successful, it was suggested that kindergarten and first-grade programs be reviewed for curricular changes in order to maintain the positive effects of nursery school on disadvantaged children.

The Cross-Cultural Attitude Inventory: A Report on Item Analysis and Stability

STEPHEN L. JACKSON, Education Service Center, Region XIII, Austin, Texas; and EARL McCALLON, North Texas State University

The Cross-Cultural Attitude Inventory consists of graphic symbols of two cultures. Under each symbol are five faces for response choices, illustrating the happy-sad dimension. The subject indicates his feelings

for the two cultures by marking one face for each symbol. In order to analyze each of the items and to establish stability for the two subtests, 313 subjects, averaged age seven years, eleven months, participated in the administration of the Inventory during the Fall of 1971, while 83 participated in the test-retest phase. Results from this study indicate that the Inventory may be assumed to provide a gross measure of acculturation suitable for use with groups (not individuals), when cautious interpretations are made.

Can Compensatory Education Improve the Self-Image of Culturally and Socially Different Children

E. M. HEPNER, Department of Education, University of California, Irvine

The following questions were investigated by studying students in three Title I schools: (1) Can compensatory education, as it is practiced, influence the self-esteem of minority or disadvantaged students; (2) Does self-esteem improve with improved school achievement; (3) Are there differences in the self-esteem of majority and minority pupils. A sample of 313 subjects in grades four, five, and six was selected. The Coopersmith SEI Inventory was administered before and after a year's program. Achievement data were also available for the same sample. Results indicate that compensatory education does not or cannot alter the self-esteem of the disadvantaged or culturally-different pupil.

19.19 ACADEMIC GAMES AND PROGRAMMED INSTRUCTION (C)

Effects of Frame Order and Practice Distribution in a Programmed Text

JAMES W. DYER & RAYMOND W. KULHAVY, Arizona State University

Undergraduates read a programmed text containing one experimental and three unrelated placebo sections. Experimental frames were either massed or distributed over placebo sections, and in scrambled or unscrambled order. There were no effects for practice distribution. Unscrambled Ss performed better than scrambled Ss on the posttest. These data were replicated by groups receiving only the experimental section in either scrambled or unscrambled order. There were no differences due to program length or presence of the placebo sections. Both this study and previous research were interpreted in terms of learner characteristics rather than content sequencing effects.

The Relationship between Stimulus and Response Prompts under Two Types of Programmed Presentations

JON I. YOUNG, University of Maine, RICHARD C. BOUTWELL, Bucknell University, M. DAVID MERRILL, and GERALD W. FAUST, Brigham Young University

Prompts in concept classification normally occur on the stimulus, while in memorization tasks prompts customarily are given on the response. Opposite results have been obtained for these two tasks with excessive prompting. English-Russian word pairs were used to compare stimulus prompts (underlining the English word) with response prompts in contextual and non-contextual memorization tasks. The English-Russian words were taken from Faust and Anderson (1967). Results showed stimulus prompts produced more correct response with the non-contextual presentation. Stimulus prompts were more effective than response prompts in the contextual presentations. A significant interaction between prompts and presentation was found.

Ways in which Student Teams and Academic Games Alter Classroom Processes

DAVID L. DeVRIES and KEITH J. EDWARDS, The Johns Hopkins University

The effects on classroom process of an academic game, student teams, and the game-team combination, were examined in seventh-grade mathematics classes. The study involved 115 students in a 2 × 2 × 3 randomized block design, manipulating the academic task (game versus traditional quiz), level-of-reinforcement (team versus individual) and student ability (low, middle, high). Student ability did not significantly mediate the games and teams effects on process. The results indicate that games and teams created classroom processes conducive to learning and that the games-teams combination is potentially an even more effective classroom treatment.

Economically Disadvantaged Parents Use Learning Games to Increase Reading Achievement of Their Children

BLANCHE E. CLEGG, University of Washington

The objective of this project was to increase the reading achievement of disadvantaged children through the intrinsic motivation in learning games with a particular communication style. Eight specially constructed learning games were played at home by parent and child over an eight week period. The games were based upon the current reading skill needs of each child. Subjects were second-graders from the Seattle central area where the residential section comprised about 90% Blacks. Reading achievement and I.Q. increased significantly. The games appeared useful as tools for learning and as a technique for involving the parent in the learning process.

An Instructional Model for Using Simulations and Games in the Classroom

STEVEN J. KIDDER, Center for Social Organizations of Schools, Johns Hopkins University

This paper presents the ideas of simulation and game theorists Coleman and Fletcher, relates them to the models of Bruner, Gagne and Ausubel, and provides a synthesis in an instructional model with an emphasis on Simulation and Games. The author also reports on preliminary research with the instructional approach. This basic model includes (1) determining student competence, (2) introducing a unit at broad conceptual level, and (3) defining new concepts, gaming environment and types of decisions to be made. Then repetitive cycling begins with a round of decision-making, performance-feedback, and an intensive analysis of decisions.

19.20 REPEATED TESTING: INTERPRETING THE RESULTS (D, SYMPOSIUM)

ERNEST LEWIS, Organizer; JOHN MOUW, Chairman

The content of this symposium is based on three research activities that have been in progress for the past three years. Two of these studies dealt with the problems of using parallel tests, change scores obtained on reliable tests, and the differences which are noted on tests of stable traits when repeated testing occurs over a relatively short time period of two to four months. The third study represented a follow-up of the other two with an eighteen month time interval between repeated testings.

Large difference scores were obtained in the series of studies when the time interval between the first and second administration of an IQ test was four months or less. However, the differences were not

observed when the time interval between repeated testings was eighteen months. The results were observed both when the same form and when parallel forms of an IQ test were used. These results have important implications for individuals involved in performance contracting. Can large differences be found over a short period of time using parallel tests, but the differences not be obvious a year later? If this does occur, short term performance contracts seem to be meaningless.

Since large numbers of schools have established criteria for placement in academic counseling, a second topic to be discussed in detail is the usability of the results obtained in a public school setting. The results of the three studies under consideration indicate that prior testing experience does affect test scores. Should academic counselors be concerned with the results? If they are concerned, what are some alternatives to the current practices?

Another topic to be discussed is the need for parallel forms of a test designed to measure a stable trait. The results to be discussed in this symposium would seem to indicate a need for parallel tests only when nonverbal tests are used to assess IQ.

In summary, the overriding issues in this symposium will be concern about the effects of prior testing experiences. The implications of research in this area will be discussed and the audience will be encouraged to actively participate.

R. Tony Eichelberger will discuss a study in which the effects of repeated I.Q. testing were investigated to ascertain the necessity of constructing and using alternate test forms. There were also attempts made to describe selected individual characteristics of subjects who improved the most over the repeated testing. One hundred and forty-five students were tested at one month intervals for three months. Two forms of the Otis-Lennon Mental Abilities Test were used in a counter-balanced design. The total group improved only from the first to second testing session. Persons repeating the same form did significantly better than persons taking alternate forms over the same testing sessions. It appeared that the students did tend to remember items from testing session one to testing session two, but this trend did not hold into testing session three. In general, the mean scores tended to decrease from testing session two to testing session three. Persons who appeared to improve most were from the upper class, or girls, or had relatively high grade point averages.

Ernest Lewis will consider the question of whether score gains obtained upon repeated testing with an intelligence test result from a practice effect, from students remembering specific items, or from a combination of both. The verbal and nonverbal batteries of an I.Q. test were administered to 860 sixth-graders on three occasions with two month and four month intervals between testing sessions. Some students received the same form of the test each time they were tested while others received alternate forms of the test. The results indicated that the subjects did experience an increase in verbal mean I.Q. In the nonverbal results, only groups retested with the same form of the test experienced significant mean gains. The verbal mean gains appeared to result from both a practice effect and students remembering specific items while the nonverbal results appeared to result from students remembering specific items from one testing session to the next. The results of this study apparently indicate that the use of parallel forms can control the effects of repeated testing only in the area of nonverbal assessment of I.Q.

Dr. James Hecht will discuss the relationship of test-wiseness ability to I.Q. and the usability of I.Q. scores. Test-wiseness involves the examinee's ability to obtain a high score on a standardized achievement test as a result of utilizing test-taking experience. Usability of I.Q. scores refers to the value of I.Q. scores to educators in making educational decisions. A primary reason for conducting the present investigation was to study the effects of repeated testing over an eighteen month interval. When I.Q. tests are administered over a short term, temporary sources of variance may be, at least in part, responsible for the increase in I.Q. Remembering specific items and practice effect provide plausible explanations for the short term gains. Gains found over periods of four months or less were not present over the longer time interval of eighteen months.

19.21 EVALUATION OF INNOVATIONS (D)

The Semantic Structure of a Set of Semantic Scales Developed for Use with Large City Pupils

JAMES E. AYRER and IRVIN J. FARBER,
The School District of Philadelphia

In a previous Semantic Differential study, Ayrer and Farber (1972) reported the results of a factor analysis which utilized a matrix sampling approach. Some problems were encountered (negative eigenvalues). The current study did not involve matrix sampling, but the same basic results were obtained. This suggests matrix sampling may be an efficient, reliable, and valid method of building a matrix for factor analysis. The structure of the semantic space is virtually the same as previously found (although the SES of the respondents differed), but is quite different from the classical EPA of Osgood and the findings of Di Vesta (1966).

A Review of Several Testing Models for Individualized Instruction Programs

RONALD K. HAMBLETON, University of Massachusetts

In order to monitor a student efficiently through an individualized instruction program it is apparent that more attention needs to be given to the areas of testing and decision-making. It appears, from a review of some of the best-known programs, that these areas are less well developed than other major elements of the programs. This paper reviews the testing models and decision-making strategies currently being used within the context of four prominent individualized instruction programs. The most recent proposals and/or solutions to the major measurement problems that are common to the programs are reported.

Controlled Multivariate Evaluation of Open and Traditional Education at the Junior High School Level

ALAN F. SEWELL, DePaul University; and ALLAN W. DORNSEIF, Matteson, Illinois School District 162

A year-long study to evaluate the relative educational outcomes of open and traditional education is being conducted at the O. W. Huth Upper Grade Center, Matteson, Illinois. Midpoint analyses and evaluations of the study are presented. The open plan group includes 140 randomly assigned 7th- and 8th- graders in a single, specially constructed classroom. An equal number of randomly assigned control students pursue the traditional departmental program. The open plan teachers follow an interdisciplinary curriculum. Pretest, midpoint, and posttest measures are presented in four areas: academic achievement, personal growth, social development, and attitudes.

The Development, Use and Importance of Instruments that Validly and Reliably Assess the Degree to which Experimental Programs Are Implemented

WARREN SOLOMON, DANIEL FERRITOR, JOSEPH HAENN, and EDWIN MYERS, National Program on Early Childhood Education, CEMREL, INC.

The objective of this study was to develop and test an instrument to assess the fidelity of the experimental treatment in the evaluation of a preschool program being field tested in 36 classrooms. The instrument, which takes one day per class to administer and was developed in a

manner to assure content validity and reliability, utilizes several data gathering strategies. Use of the instrument revealed that the degree of implementation varied from classroom to classroom. Relationships between level of implementation and child outcomes, uses, and implications of such instruments, and comparison of this instrument to others are explored.

Stability of Semantic Factor Structure and Change in Connotative Meaning of Educational Concepts during Teacher Training

RICHARD J. STIGGINS, and JOE L. BYERS,
Michigan State University

A series of eleven concepts, eight of which were presented in a teacher training course, were rated by 252 undergraduate education majors on 15 semantic differential scales at the beginning and end of the course in an attempt to assess changes in the factor structure of semantic space and changes in the connotative meanings of the concepts. Scales selected to represent the traditional EPA structure developed by Osgood were best explained by a four factor solution which deviated from the hypothesized structure. This structure was found stable over time and factor scores for each orthogonal factor demonstrated significant gains in directions consistent with the goals of teacher training.

19.22 THE PUPIL PERSONNEL SERVICE STAFF AND SCHOOL INNOVATION (E, SYMPOSIUM)

ARTHUR R. DELONG, Grand Valley State College,
Chairman

An attempt at innovation was and is still being made in two New York School systems by instituting modern management techniques to implement school programming. This process of introducing the new methods requires a more specific study of development as well as a reappraisal of Pupil Personnel Staff Services because of the "ripple effect" of the changes. The purpose of this symposium was to review the above both to help others who are planning such innovation and to receive assistance in evaluating the present state of progress from those who may have suggestions to offer.

"Derivation of Goal Statements and Their Impact upon Educational Evaluation," is the title of the paper to be presented by Gerald Wohlferd, State Education Department, Albany, New York. It is axiomatic that an evaluation demands a statement of goal, for without a goal there can be no judgment of progress or success. Goal statements spring from two major sources: experience or theory. One source has its foundation in the present. The other has its genesis in the envisioned future. The former is generally a comparison with the present. The latter is a comparison to a position on a theoretical continuum. In this paper the two bases upon which goal statements are formulated are explored. The advantages, disadvantages and implications in relation to findings of each type are discussed.

H. Weldon Frase, Grand Valley State College, Allendale, Michigan, will present a paper entitled "The Development of Learners as a Criterion of School Programming." Once the issue of whether change should involve accommodating school program to learners rather than learners to school program was raised, the nature of developing learners had to be more fully understood. Furthermore, this understanding had to deal directly with those aspects of learners' development which the school program must accommodate. The methods and the logic used to achieve this understanding are delineated.

"Pupil Personnel Service Activities and Problems When Modern Management Methods Are Introduced in a School" is the topic of the paper being presented by Charles M. Armstrong. Modern management methods are in process of introduction in two New York State school systems: East Syracuse-Minoa and Guilderland. Pupil Personnel Service activities have been significantly affected by the change. This paper will describe some of the changes and discuss their long-term implications. Among the points being made are: (1) Pupil Personnel Service Staff monitors all pupils rather than problem pupils; (2) PPSS reviews curriculum in terms of pupil progress toward the school defined end products. This involves setting goals that are desired and creating environments that produce them rather than trying to see how pupils have developed and then maintaining environments to perpetuate what has been; (3) PPSS reports on pupil progress to school administrators; (4) PPSS pilots the trouble-shooting when school processes do not work; and (5) PPSS has a larger role than before to play in establishing school objectives.

Jack Bicknell, State University of New York at Fredonia will discuss "An Analysis of Successes and Failures and What was Learned from Them." Delineating only success experiences of a program is of little value to others. Failures as well as successes must be dealt with as a basis for generalizing recommendations for other programs with similar objectives and similar problems, and recognized as clues for programs with differing objectives and/or differing problems.

19.23 MATRIX SAMPLING APPLICATION (D and NCME)

A Comparison of School Mean Achievement Scores with Two Estimates of the Same Scores Obtained by the Item-Sampling Technique

LEONARD S. CAHEN, Educational Testing Service;
THOMAS A. ROMBERG, University of Wisconsin;
WALTER ZWIRNER, University of Calgary

The study examined the accuracy of estimating test means by the item-sampling technique. The subjects were twelfth-graders from 35 schools. Half of the students in each school first took a complete 24-item mathematics test and then on the following day took an item-sampled version of the same test. A second random group of students took only the item-sampled version. Taking the complete test did not influence the performance on the item-sampled version. The estimated item-sampling means were close to the complete test means. The mean differences diminished as a function of the number of students tested.

An Evaluation of Sampling Designs for School Testing Programs

RICHARD M. JAEGER, University of South Florida

While School Systems most often use achievement test results for individual appraisals, increasing attention to program evaluation and accountability requires that test results be used for institutional appraisals as well. When institutional test results are desired—that is, results for schools or school districts—not all pupils need be tested. Two alternative testing program designs are proposed, for situations where individual test results are desired for some subject areas or grades, and institutional results are desired for others. Seventeen alternative finite-population sampling procedures can be used with these designs. The efficiency of each procedure is evaluated using data from a medium-sized school district, and relative efficiencies are derived. Some sampling procedures are found to yield acceptable precision for estimation of district-mean achievement with a sampling fraction of only five percent.

Item-Sampling as a Classroom Evaluation Technique

JOHN P. POGGIO and DOUGLAS R. GLASSNAPP, University of Kansas

The present research was initiated to investigate if item-sampling as a procedure would yield a more accurate and stable index of student achievement during formative evaluation when compared to indices arrived at by the traditional method of assessing pupil knowledge and understandings within the framework of multiple choice testing for student evaluation. Results have indicated that item-sampling as a method for measuring classroom achievement provides no more precise information than tests of the same length constructed in the traditional manner. It was shown that item-sampling can be employed for classroom assessment without the fear that perhaps the procedure itself would deter from some estimate of an individual's performance. The research has demonostrated that item-sampling can provide feedback to the instructor over a greater range of content objectives within the same time limits that typically provide for a narrower sampling of course related objectives by way of traditional test construction. It was also shown that item-sampling, in addition to covering a greater range of content objectives, can do so with a fewer number of items per test without losing predictive power.

The Effects of Cluster Sampling

JANE WILLIAMS BERGSTEN, University of Iowa

To estimate achievement levels of pupils in a given state or region, it would be administratively easier and less expensive on a per pupil basis to sample and test entire school systems, entire buildings or entire classes of pupils rather than to sample and test pupils individually. The use of any of these types of cluster samples, however, decreases the precision of the estimates which can be made, based on a given number of pupils. This study measures the relative precision of the estimates for 20 different cluster sample designs using ITBS scores of fourth grade pupils in Iowa.

19.24 TEST DEVELOPMENT II (D)

The Development of a Measure to Evaluate the Communication Skills of Young Children

MARGARET C. WANG, JIM MAXWELL, SUZANNA ROSE, and ELAINE COREY, Learning Research and Development Center, University of Pittsburgh

The purpose of this study was to develop an evaluation instrument to assess young children's language communication skills. Two parallel sets of Language Communication Skills Tasks (LCST) were developed. Each task was developed to measure the effectiveness of the child's communication skills as both a speaker and listener. The subjects were 112 children from an inner-city public elementary school. Two sets of measures were derived. The first set dealt with communication measures and the second with the linguistic components. Detailed discussion of findings, procedures, and plans to revise and validate the LCST are presented in the paper.

The Development of a Mathematics Self-Concept Test

GERALD KULM, Purdue University

A self-concept test was developed for use in a mathematics course for prospective elementary teachers. A mastery learning approach was being tried in the course. The 27-item test contains two scales that measure (1) satisfaction, and (2) change in the way the subject feels with respect to each item. Coefficient alpha reliabilities were .86 for Scale I and .88 for Scale II when the test was given to 250 subjects. Factor analysis produced subtests of self-concept related to Interest, Class Participation, Doing Assignments, Learning Math, and Remembering Math.

Integrational Deficits in Perceptual-Visual-Motor Learning Disabilities: A Diagnostic Procedure

ABBY G. ROSENFIELD, Northeastern Ill. Univ.

Thirty subjects in grades one through five, matched for age, grade, and mental ability, and half of whom had been diagnosed by the school as having learning disabilities, were administered an experimental diagnostic test. The experimental test was designed to diagnose the presence of perceptual-visual-motor learning disabilities. It was hypothesized that perceptual-visual-motor deficits are integrational in nature. Diagnostic accuracy of the experimental procedure, in combination with data from the EGY test (Kent, 1943), of 96.6% was considered to support the hypothesis of integrational deficit and to indicate the possible development of a powerful new diagnostic tool much needed by schools.

A Model for Psychometrically Distinguishing Aptitude from Ability

SUSAN E. WHITELY and RENE' V. DAWIS, University of Minnesota

It is now agreed that current ability measures reflect a complex interaction of environment with genetic potential. This leads to a basic measurement problem since persons with the same measured ability may vary widely in potential due to non equivalent learning opportunities. A model which may hold some promise in psychometrically distinguishing ability (current status) from aptitude (potential) is presented. Data on a simple ability are analyzed according to the model to illustrate how some of the practical problems may be solved.

The Development of a Language Behavior Inventory for Use with Severely Retarded Children

MACK L. BOWEN, Illinois State University

The purpose of this project was to develop an experimental language inventory that would be useful as a research instrument in assessing language behaviors of retarded children. The major theoretical basis for this inventory was Gagne's (1965) types of learning hierarchy. The individually administered inventory consists of eight subtests corresponding to five of Gagne's types of learning. The inventory was administered to 160 severely retarded children (IQ's from 35 to 55) of six and one-half to ten years of age. Age and IQ were significant as sources of variance, and mean subtest scores generally demonstrated linear progression with age.

19.25 CAREER DEVELOPMENT IN YOUNG CHILDREN (E)

The Emergence of Vocational Expectations in Pre-School Children

LISA K. BARCLAY, University of Kentucky

Sixty-four kindergarten children were pretested for ability to conserve liquid quantity and on an original picture test of vocations (choosing a man, a woman, or both as suitable for particular jobs). After random assignment to three treatment groups, including (1) reading books about women working, (2) general career information

without reference to sex, and (3) a placebo control, three 15 minute sessions took place. It was found that conservers made significantly more male and total choices than did non-conservers. Girls made more female choices than did boys, and there was a significant treatment effect favoring the books about women approach.

The Influence of Vocational Information on the Career Development of Elementary School Children

SUZANNE HARKNESS, Prince William County School System; JEANNETTE A. BROWN and MARY A. MacDOUGALL, University of Virginia

This study investigated the influence of a program of vocational information on the career development of upper elementary children. The study was conducted over a six-weeks period in an urban elementary school. Pre-post mean comparisons indicated that pupils made significant mean gains on an Occupational Knowledge Scale. In addition, the study examined the relationships between seven independent measures of a pupil's vocational information and his (1) vocational discrimination, (2) prestige ranking of vocations, (3) accuracy of vocational perceptions, and (4) future vocational choice at the initiation and at the conclusion of the program.

20.01 CRITICAL RESEARCH NEEDS IN COMMUNITY MENTAL HEALTH, REHABILITATION COUNSELING AND COLLEGE COUNSELING (E, EXPERIMENTAL SYMPOSIUM)

JAMES R. ENGELKES, Michigan State University, Organizer

The purpose of this session is to explore the commonality and differences among counseling researchers in three settings: community mental health, rehabilitation agencies, and colleges. The objectives are as follows: (1) to present varied positions on the background and current status of research in the three settings, (2) to provide an opportunity for interaction with leading researchers in each of the three settings, and (3) to stimulate research on the part of those attending the session.

Jerold D. Bozarth of the University of Arkansas will discuss rehabilitation counseling. Steven J. Danish of Pennsylvania State University has chosen community mental health as his topic. John O. Crites, University of Maryland, will discuss college counseling.

20.07 SCHOOL COMMUNITY INTERACTION (A)

The Community Action Agency and Educational Authority: A Theoretical Analysis of Inter-Organizational Politics

HARRY H. STURGE, Brooklyn College of The City University of New York, and HARLAND BLOLAND, New York University

In recent years, much of the research in educational politics has utilized systems analysis as a framework for investigation. In order to provide some alternative schemata for inquiry, this study joins the socio-political concepts of Gamson (1968) and Bloland (1973), and the model of bureaucratic expansion developed by Holden (1966), and presents a case analysis of the inter-organizational behavior manifested during the implementation of Title I (ESEA) in one county. The authors found that inter-agency politics developed in four stages. During each stage the community action agency and educational authorities behaved differently along the dimension of trust, in their political styles, and in agency disposition to expand.

The Press Relations of a Local School District: An Analysis of the Emergence of School Issues

JON R. MORRIS, University of Minnesota; CORNELIUS GUENTER, Moundsview Public Schools

Press coverage of a suburban midwest school district is analyzed as a set of time series of observations including amount and quality of coverage. Possible shifts in these series due to emergence of controversial issues are analyzed statistically using the Integrated Moving Average time series model. Evidence of significant shifts in quantity but not quality of reporting was found. Implications for school district relations with the press are discussed.

The Revival of "Local Control" in Suburbia: Some Unanticipated Consequences of Increased Participation

LOIS S. STEINBERG, Office of Research and Evaluation Services, City College, CUNY

This paper, the third based on a four year sociological field study of school-community relations in a factional suburb, analyzes conflict generated by the discrepancy between the perceived and actual norms governing the school board-community relationship. A three year effort to develop board responsiveness followed a seven year period of professional domination and suppression of dissent. Increased participation had the unanticipated consequence of raising expectations for citizen influence in decision-making and creating public visibility of the decline in school board authority. Findings will be related to previous research and theory on citizen participation and conflict resolution.

The Parent-School Communications Questionnaire: A Measure of Boundary Permeability

WILLIAM K. WIENER, Lenoir Rhyne College; ARTHUR BLUMBERG, Syracuse University

The Parent-School Communications Questionnaire (PSCQ) is based upon Katz and Kahn's (1967) notion of a directly proportional relationship between the permeability of the boundaries and the openness of a social system. The instrument is constructed to measure parental perceptions of five factors that seem heuristically to compose the social-psychological boundaries of a school, and to elicit information about the degree and quality of interaction and influence of parents with personnel of their child's school. The results of the field test of the PSCQ indicate its potential as a tool to assist school administrators in testing parental perceptions of the current status of their schools.

20.11 METHODOLOGICAL PROBLEMS (D)

Generalized Correction for Attenuation

ANNE PETERSEN and R. DARRELL BOCK, The University of Chicago

A generalized correction for attenuation for multivariate data is developed and demonstrated. The resulting estimate of the "true" covariance matrix, using the spectral decomposition of the observed and error covariance matrices, is shown to be the maximum likelihood estimate, restricted in the case where the dimensionality of the space is less than the number of variates. Two examples demonstrate the usefulness of the correction.

The Effect of Nonnormality in Torgerson's Multidimensional Scaling Model

MICHAEL J. SUBKOVIAK, University of Wisconsin Madison

When Torgerson's multidimensional scaling model is used in conjunction with the method of tetrads, derived coordinates are based on data which is assumed to be distributed normally. The object of this study was to determine the amount of error contained in derived coordinates when the normality assumption is violated. Torgerson coordinates were derived from various cases of nonnormally distributed data. Derived coordinates were then compared for accuracy to true coordinate values, which were known in each case. The Torgerson model produced highly accurate coordinates in all cases. Since a wide range of distributions was considered, the results appear to be quite generalizable.

Multidimensional Scaling of Classroom Interaction Data

ROBERT E. RUMERY, Illinois State University;
BARBARA M. HARTNETT, Lincoln College

The use of Kruskal's nonmetric multidimensional scaling model for analysis of classroom interaction data is discussed. Four distance models are proposed which lead to multidimensional representation of single sequences, sets of sequences, and behavior categories using symmetric and conditional proximity options of the model. Results of application of the four models to real data revealed that single sequence and sets of sequences were adequately represented in spaces of two or three dimensions. The dimensions were interpretable as classroom climate variables and/or affective or cognitive content of verbal behavior. Relative advantages of symmetric and conditional proximity models are discussed.

The Degree and Nature of the Relations Between Traditional Psychometric and Piagetian Developmental Measures of Mental Development

WALTER ENNIS HATHAWAY, Jr.,
Portland Public School System

The sample used in this study consisted of 104 school children from a homogeneous middle class environment. All subjects yielded data on three occasions (k, I, II) on 21 traditional psychometric and 10 Piagetian variables, as well as on 10 scholastic achievement variables on two occasions (I, II). Descriptive statistics, correlations, factor analysis, and stepwise multiple regression have been employed to analyze the degree and nature of the relationship between the traditional psychometric and the Piagetian measures. The results of this study indicate that there is a moderate, positive, and statistically significant relationship between the traditional psychometric and the Piagetian measures of mental development.

On the Assessment of Psychometric Adequacy in Correlation Matrices

CHARLES D. DZIUBAN, EDWIN SHIRKEY,
Florida Technological University

Three techniques for assessing the adequacy of correlation matrices for factor analysis were applied to four examples from the literature. The methods compared were: (1) inspection of the off diagonal elements of the anti-image covariance matrix ($S_i^2 R^{-1} S^2$), (2) the Measure of Sampling Adequacy (M.S.A.), and (3) Bartlett's Test of Sphericity. Of the four matrices used for the study, two were comprised of eight variables and one each of fourteen and twenty. The sample sizes ranged from 50 to over 3,000. The results indicated that the three methods for overall assessment yielded comparable results. It was recommended, however, that methods for individual variables assessment also be used.

20.12 RESEARCH STUDIES INVOLVING IQ TESTING (D AND NCME)

Stability of Verbal and Nonverbal IQ Scores for Spanish-Surname Students in Grades 1-11

GLENN H. BRACHT, University of Minnesota;
KENNETH D. HOPKINS, University of Colorado

The long-term stability of verbal and nonverbal IQ scores was studied for a sample of 146 Spanish-surname students. About 30-50% of Spanish students do not speak English when they begin school. The California Test of Mental Maturity or the Lorge-Thorndike Intelligence Tests were administered in grades 1, 2, 4, 7, 9, and 11. It was found that the stability of IQ scores for the Spanish-surname students is highly similar to the stability pattern of a representative group of about 4,000 students from the school district.

Comparisons of Learning Potential and IQ Measures in Three Levels of Ability

MILTON BUDOFF and ELISHA Y. BABAD,
Hebrew University of Jerusalem

In learning potential (LP) tests, intelligence is measured by repeated administrations of reasoning tasks, with interpolated training in problem-relevant strategies. In a comparison of the differential sensitivity and validity of LP and IQ measures, subjects were divided into three IQ groups: bright normal, dull-to-average, and subnormal (EMR). In the first study, both low IQ groups gained more from the coaching than did the bright group. In the second study, the concurrent validity of the LP test was equal to that of IQ in the entire sample and in the bright group, but superior to IQ in the low, disadvantaged groups.

A Study of Selected Creative Thinking Tests in Conjunction with Measures of Intelligence

RUTH RICHARDS HOLTZ, Boston University

Selected Guilford, and Wallach and Kogan creative thinking tests were given to several companies of Naval recruits. All tests were timed. Results for 394 men were analyzed along with measures of intelligence. Oblique factor analysis and convergent/discriminant validity arguments outlined (1) many similarities and a few differences between creative thinking tests, and (2) a distinct creative thinking domain, only weakly related to intelligence. Conclusions are modified by bivariate scatter shapes. These suggest a necessary but not sufficient predictor relation of (1) intelligence on *all* creative thinking scores, and of (2) some creativity scores on others.

Expectancy and Race: Their Influences upon the Scoring of Individual Intelligence Tests

JOHN F. JACOBS, Kent State University;
CARL A. DeGRAAF, Southern Illinois University

The purpose of this study was to investigate the influence of the variables of race (both subject and examiner) and expectancy upon the scoring of individual intelligence tests. Sixteen black and sixteen white practicing psychologists evaluated video taped administrations of the WISC given to one black and one white child. One-half of the case histories suggested the child being evaluated was bright and the other half suggested the child was dull. Results indicate expectancy affects

psychologists' judgment in the expected direction, but white and black psychologists evaluate white and black children in a similar manner.

Factorial Structure, Reliability, Validity, Effectiveness, and Efficiency of the Canadian Cognitive Abilities Test Re-Examined

BIKKAR S. RANDHAWA, DENNIS HUNT and SHIRLEY A. RAWLYK, University of Saskatchewan

A random sample of 270 first-grade children were given the Canadian Cognitive Abilities Test (CCAT) on two occasions within seven months. During the second administration the WISC was also administered. KR-20 reliabilities of the CCAT for the two administrations were repectively .83 and .74. The test–retest reliability was .75. The correlation coefficient of the WISC IQ's and the CCAT second administration IQ's was .63. The efficiency and effectiveness indices of the CCAT were also obtained. A factor analysis of the WISC and CCAT subtests indicated that the two instruments measured different constructs. Other useful item data were also obtained.

20.13 STATISTICS: ANOVA (D)

The Effects of Variance Heterogeneity on Selected Multiple Comparison Procedures

JOHN F. HOWELL, Springfield (Mass.) Public Schools; PAUL A. GAMES, The Pennsylvania State University

The robustness of three multiple comparison procedures (Multiple *t*-test, Tukey WSD, and Sheffe *S*-test), to the violation of the homogeneous population variance assumption was investigated using three different standard error estimates. These estimates were: (1) Mean Square Within (MSW), (2) the standard error of the traditional *t*-test, and (3) the standard error of the Fisher-Behrens *t'* statistic. The procedures lacked robustness to variance heterogeneity using the Mean Square Within standard error estimate for individual comparisons. The procedures did not lack robustness using the Fisher-Behrens standard error estimate for any comparisons. The universal use of the Fisher-Behrens estimate is recommended.

A Bonferonni Confidence Interval Procedure for Non-Negative Variance Estimates

GERALD J. SCHLUCK, The Florida State University

Estimation of variance components or intra-class correlation coefficients may include negative values. The statistician either changes the lower limit to zero or includes the negative value. The first option changes the confidence coefficient and the second option includes "impossible" parameter values. A Bonferonni confidence interval procedure is given for estimating variance components with known confidence coefficient not allowing negative variance estimates to be included. Three numerical examples are presented to compare the technique with other commonly used procedures.

Unequal Cell Frequencies in Analysis of Variance: A Review and Extension of Methodology for Multiple Missing Observations

BARTON B. PROGER, RAYMOND G. TAYLOR, Jr., PAUL A. GREEN, LAWRENCE H. CROSS, LESTER MANN, Pennsylvania Resources and Information Center for Special Education, and JOHN R. McGOWAN, Southern Connecticut State College

Many researchers assume that unequal cell frequencies in analysis of variance (ANOVA) designs result from poor planning. However, there are several valid reasons for analysis of an unequal-*n* data matrix. The present study reviewed four categories of methods for treating unequal-*n* matrices by ANOVA: (1) unaltered data (least-squares solution and unweighted means solution); (2) data substitution (grand mean method, cell mean method, Winer method, Snedecor-Cochran method); (3) data deletion, and (4) data clustering (unreplicated cell mean method, unreplicated random data clustering method, replicated random data clustering method). The methods were compared empirically and theoretical problems with each are discussed.

Analysis of Variance through Full Rank Models

NEIL H. TIMM and JAMES E. CARLSON, University of Pittsburgh

The rationale and theory of a full rank model that can be employed to analyze data obtained from standard experimental designs employed in the behavioral sciences is developed. A number of examples of the model are discussed to illustrate the advantages of this model over the classical less than full rank model. The use of the model for balanced, unbalanced and missing data cases is also included.

Optimum Sample Size and Number of Levels in the Random-Effects Analysis of Variance

ROBERT S. BARCIKOWSKI, Ohio University

In most behavioral science research very little attention is ever given to the probability of committing a Type II error, i.e., the probability of failing to reject a false null hypothesis. Recent publications by Cohen have led to insight on this topic for the fixed-effects analysis of variance and covariance. This paper provdes social scientists with some insight in dealing with Type II error, and optimum sample size and number of levels in the random-effects analysis of variance.

20.14 PREDICTION AND MEASUREMENT (D)

Aspects of Social Responsibility

PHILIP M. CLARK, STEVEN P. AMES, and KATHLEEN R. STOHRER, The Ohio State University

An attempt was made to isolate various subcomponents of social responsibility and to explore personality attributes related to it. Responses of 187 Ohio State University students to a 56-item Social Responsibility Scale developed by Gough, McCloskey, and Meehl were factor analyzed. Eight factors accounted for 55% of the common variance, and these were named: involvement–non-involvement, ethnocentricity–broad world view, leadership–followership, civic duty–civic non-responsibility, personal honor–lack of internalized sense of principle, self-discipline–lack of self-discipline, conventionality–unconventionality, and belongingness–alienation. Results were discussed in terms of stability and change in the construct over time.

Developing Empirical Predictors of Effective Leadership in Innovative Situations Using the Stepwise Regression Procedure

CLINTON E. BOUTWELL, University of Massachusetts; and RICHARD C. BOUTWELL, Bucknell University

The purpose of this study was to devise a predictive equation (tool) by which teacher leadership could be predicted in terms of personality characteristics through standardized measurement instruments. Four standardized inventories were administered to 25 teachers. Expert judges with a consensus of objective predetermined criteria evaluated

these teachers as to instructional and administrative innovation and interpersonal relationships leading to leadership. Using a factor analysis, product moment correlations, and the stepwise regression model, a prediction equation was generated which resulted in a significance level (d.f. 1, 24 $p < .05$) between effective and noneffective teacher leaders.

Defensiveness as a Covariate in the Assessment of Self-Concept Change

BRUCE L. ARNEKLEV, Utah State University

This study was undertaken to determine empirically the extent to which changes (between pretest and posttest) in self-report scores used to assess defensiveness were related to changes in self-report scores used to assess self-concept. Data were drawn from a population of Navajo adolescents on independent sub-scales of the *Tennessee Self Concept Scale*. Examination of the data by correlation and analysis of covariance indicated that changes in self-report scores for defensiveness and self-concept were interrelated and should be considered conjointly in the evaluation of programs which are implemented to enhance self-concept.

Prediction of Procrastination in a Self-Pacing Instructional System

DONALD D. ELY and JOHN D. HAMPTON,
Oklahoma State University

The objective of the study was to predict potential procrastinators in a self-pacing instructional system. Seventy-five entering college freshmen were randomly selected to participate in a large scale individually paced program. Those students (25) who procrastinated were classified as "no-start-procrastinators" (NSP); the remainder (52) were classified as "satisfactory progressists" (SP). This binary variable (NSP-vs-SP) was regressed via step-wise multiple regression on the following predictors: ACT scales, Nelson-Denny scales, SSHA scales, Cooperative Algebra Test, Cooperative Trigonometry Test, high school percentile rank, and "under-over" achievement. The multiple regression yielded a multiple correlation of .58.

Development of a Simple Readability Index for Job Reading Material

JOHN S. CAYLOR and THOMAS G. STRICHT,
Human Resources Research Organization

The FORCAST readability index was developed and cross-validated on technical job reading materials and job candidates. Several structural properties of passages were related to passage readability defined as the lowest measured reading grade level at which half the readers met a standard cloze criterion on the passage. The simple, single variable FORCAST Index ($RGL = 20 - \frac{\text{Number of 1-syllable words,}}{10}$) correlates .9 with the Flesch and Dale-Chall Indices, has a cross-validity of .8 with the cloze criterion, and yields an average absolute error about half that of the two standard general readability indices studied.

20.21 STUDENT CHARACTERISTICS (C)

Similarities and Differences Between Three and Four Year Medical Graduates

JUDITH GARRARD and R. G. WEBER,
University of Minnesota Medical School

In responding to national concerns about the need for physicians, some medical schools have revised the content of their traditional curricula and/or reduced the length of schooling from four to three years. The purpose of this paper is to report similarities and differences between three and four year graduates. Dependent variables include scores on admissions tests, biographical information, personality tests, final exams in all required basic and clinical courses, and nationally standardized certification exams. Results indicate no major differences on all variables except exams in clinical sciences and personality measures. On both variables, three year graduates score significantly better.

Student Characteristics Associated with Success in a Mastery Learning Strategy

SUSAN K. THRASH and WALTER G. HAPKIEWICZ,
Michigan State University

A mastery learning strategy for teaching educational psychology was evaluated over three successive terms. Preassessment data revealed that: (1) while there were substantial individual differences among students in entry skills, their final examination performance was uniformly high, and (2) the strategy appeared to be particularly advantageous for those students with weak backgrounds. An attitude scale constructed and validated for use over the same period of time revealed that: (1) in general, students reacted favorably to the strategy, (2) graduates (primarily in-service teachers) were more resistant to the "new teaching technique" than undergraduates ($p < .05$), and (3) males rated the mastery strategy significantly higher than females ($p < .003$).

Student Behavior underlying Faculty Judgments of Academic Performance

JONATHAN R. WARREN, Educational Testing Service

In an identification of the varieties of student behavior that enter faculty judgments of academic performance, 311 faculty members in 15 colleges and universities described how a good student and a poor student each differed from an ordinary student in one of their classes. Content analysis of these descriptions identified about 100 separate phrases that could be grouped into seven major categories and 18 subcategories. The frequency with which the different categories were used varied with the faculty member's field, sex, age, and orientation to teaching and with the level of the class.

An Alternative to Ability Grouping: Personality Grouping

JOHN P. POGGIO, University of Kansas

This study attempted to broaden the perspective of homogeneous classroom grouping strategies through an examination of a grouping plan which matched both students and their teachers on the basis of compatible levels of specific personality characteristics. The focus of the study was to examine empirically the degree of relationship that existed between a series of noncognitive grouping criteria, defined as personality characteristics, and the cognitive outcomes of classroom instruction in mathematics. It was found, in general, that personality grouping was feasible on the basis of certain specific personality characteristics, but more research is needed to study different groups, other content areas, and other personality grouping criteria.

Laboratory Team Leaders in a General Psychology Class

WILLIAM J. GNAGEY and
DAVID GIRMSCHEID, Illinois State University

Three hundred and nineteen general psychology students were divided into 30 laboratory teams which met for an hour each week to propose, carry out, and write up two research studies with human

subjects. They attended lectures on the other two days. Elected team leaders were significantly different from their classmates in sex and achievement. Significant positive correlations were found between group cohesion and group rating of the laboratory team method ($r = .72$, $p < .01$), group total course evaluation and group rating of the laboratory team method ($r = .45$, $p < .05$), and leaders' total quiz score and leaders' rating of their team members contributions ($r = .46$, $p < .05$).

20.23 STUDIES OF EDUCABLE MENTALLY RETARDED (C)

Effects of Classification Exposure upon Numerical Achievement of Educable Mentally Retarded Children

KERRI L. FUNK and M. S. TSENG,
West Virginia University

Two groups of educable mentally retarded children were compared as to their arithmetic and classification performances attributable to the presence or absence of four and one-half week's exposure to classification tasks (taken from Inhelder and Piaget). The randomized block pretest-posttest design was used. ANOVA revealed significantly greater mean gains for the experimental group on both arithmetic performance ($p < .05$) and classification performance ($p < .01$). The implication of the findings in connection with implementing certain practices to allow for the fullest development of classification behavior of the EMR are also discussed.

Non-Verbal Communication of Retarded Pupils

EVAN R. POWELL and VIRGINIA C. DENNIS,
Institute for Behavioral Research, University of Georgia

Thirty EMR and 20 TMR pupils were observed interacting with classmates and 25 teachers in a Retardation Center. Multi-modal communicative behavior was noted, with focus on interpersonal spatial distance as one index of relationship and affect between interacting partners. Empirical data collected on 1,400 dyads with the use of the DIAD showed that EMR pupils and TMR pupils communicate with their classmates at the same mean distance. TMR pupils interact with their teachers at closer range than with other TMR pupils, and EMR pupils interact at more intimate distances with other EMR pupils than with their teachers. Differences by sex and race were also presented.

Anticipation of Cognitive Behavior of Mentally Retarded and Normal Children

CANDACE GARRETT, MELVYN I. SEMMEL,
DOROTHY SEMMEL, and GAIL WILCOVE,
Indiana University

The construct of anticipation involves the use of a previously formed concept to deduce characteristics of events which could occur. This study was designed to determine how accurately selected groups of adults, including many future teachers, could anticipate which responses to a set of questions EMR and normal children were most likely to give. The responses to these questions were obtained from normative data collected on samples of EMR and normal children. The results indicated that special education majors, students in special education courses, students with previous experience with EMR children, and older students were better anticipators than their counterparts.

The Educable Mentally Retarded Child: Current Issues and Teacher Attitudes

I. LEON SMITH and SANDRA GREENBERG,
Yeshiva University

The purpose of this study was to assess the attitudes of teachers of EMR children in relation to current trends in the field through their responses to questions based on hypothetical, but realistic profiles of students. Thirty-six randomly selected teacher clusters in the field test network of the Curriculum Research and Development Center in Mental Retardation were randomly assigned one of nine profiles (total N = 288). Data were analyzed through chi square, correlational, and ANOVA procedures. Results suggest that teacher atttitudes are at variance with current trends. Implicstions concerning the role of the school as a social institution are discussed.

20.24 ASSOCIATIVE LEARNING (C)

Stimulus Concreteness and Mode of Elaboration in Children's Learning

FRANK W. WICKER and CAROLYN M. EVERTSON,
University of Texas at Austin

Paired-associate learning of children was investigated as a function of age (four vs. seven years), stimulus-type (line drawing, color photograph, or object) and mode of elaboration (visual or verbal). Photographs and objects were associated with more learning than drawings at both ages and with both types of mediational elaboration, but it was suggested that differences among the three types of pictorial stimuli decrease with age. A previously reported Age X Elaboration interaction suggesting a relative disadvantage of visual elaboration for the younger children was not replicated.

Experimenter-Provided vs. Subject-Generated Learning Strategies: Which is Better?

STEPHEN KERST and JOEL R. LEVIN,
Wisconsin Research and Development Center for Cognitive Learning

Imagery and sentence mediators which linked the stimuli and responses of pictured paired associates were either provided by the experimenter or generated by fourth- and fifth-grade children. While both experimenter-provided and subject-generated sentence and image mediators improved paired-associate recognition at acquisition and on a retest one week later, variability was greater in the subject-generated mediator groups. This finding suggests that mediator generation is a skill available to some but not to all children of this age. Children instructed to generate mediators transferred this strategy without furthur instruction to a new list given one week after acquisition.

The Paired Associate Task and Levels of Learning

RICHARD PRAWAT, Oklahoma State University

Paired associate learning efficiency was assessed within eighth-grade samples identified by digit span and IQ test performance as Level I, low SES learners, and Level II, high SES learners (N = 80). Three levels of stimulus concreteness, defined by the Paivio norms, were manipulated in a repeated measures design. Imagery Conditions constituted a highly significant source of variance (H.-*I* > Mod.-*I* > Low-*I* pairs). The predicted Learning Level X Imagery Conditions interaction was not obtained, nor did the high SES group significantly outperform the low. Strategy scores derived from Ss reports correlated significantly with PA learning only for low SES Ss.

Elaborative Prompt Effects in Children's Noun-Pair Learning: A Two-Stage Analysis

DANIEL W. KEE and WILLIAM D. ROHWER, Jr.,
University of California, Berkeley

The effects of aural and pictorial prompts in children's noun-pair learning efficiency were estimated in terms of response and associative

learning. A 20 item noun-pair learning task was administered individually to 200 second- and third-grade children. Indices of response learning (pictorial-identification and free verbal recall) revealed equivalent effects among prompt conditions whereas measures of associative learning (multiple-choice pictorial-recognition tests) demonstrated substantial learning improvement as a function of aural and pictorial elaborative prompts. This outcome was regarded as an unequivocal identification of the locus of elaborative prompt facilitation in noun-pair learning.

Pictorial and Verbalization Factors in the Paired-Associate Learning of Unfamiliar Stimulus Terms

ROBERT E. DAVIDSON, University of Wisconsin, and
SHERRY A. B. PERRY and PHOEBE K. BAKER,
University of Oregon

Verbalization and/or imagery processes facilitate paired-associate learning. The degree of facilitation seems to depend on how well sentences or images unitize the stimulus and response terms. Unfamiliar or nonsense stimulus terms may not be able to play a role in such processes unless they are "concretized." A total of 64 third-grade pupils learned ten paired-associates with nonsense words serving as stimuli and familiar nouns serving as responses (e.g., *latuk-boat*). In a balanced factorial design, Ss heard sentences about and/or saw pictures of the paired items. Sentences without concretized (pictured) stimuli impaired learning, while sentences with pictures facilitated learning significantly. Perhaps a sentence serves to assure the triggering of a compound image that unitizes the terms.

20.26 THE NATIONAL EVALUATION OF FOLLOW THROUGH: A TWO YEAR REPORT (C, SYMPOSIUM)

MARIAN SHERMAN STEARNS, Stanford Research Institute, Organizer

The objective of the symposium is to expose our professional colleagues to the research methods and the preliminary findings of the National Follow Through Evaluation and to get a critical public review.

The first SRI presentation will be made by Marian Sherman Stearns, Stanford Research Institute. She will describe the changing roles and theories of the Follow Through program from its original authorization as a targeted (poverty) comprehensive services program under the Economic Opportunity Act amendments in 1967 through its evolution as a social experiment under the auspices of the U.S. Office of Education. The concept of Follow Through which guided actual evaluation is discussed. The policy questions to which the evaluation was addressed are elaborated. Follow Through is viewed in the evaluation primarily as an attempt to discover which of several sponsored educational approaches or models implemented in primary schools throughout the nation are most successful in terms of children's achievement, affect, and attendance, and in terms of parents' and teachers' attitudes and behavior.

The presentation by Philip Sorenson, Stanford Research Institute, describes the longitudinal design (including reasons why the design does not satisfy conventional standards for an experiment), data collection and reduction logistics, and the nature of the data sets on which analyses have been based. The implications of the fact that the most recent analyses were reported before the first evaluation cohort had exited from the Follow Through program are discussed in the context of conflicts between policy-oriented evaluation objectives and theory-oriented research questions.

The third presentation, by John Emrick, is concerned with the development of evidence to date of the impact of the Follow Through program. Included in this presentation is a description of the organization and development of measures and scales and of the analysis methods employed to address the evaluation questions. The most recent results from these analyses are presented and discussed. This discussion will include one, two, and possibly three year program effects. Special attention is given to the assessment of differential effectiveness of the various early education models. These results are interpreted within the context of a "national" *vs* "local" framework.

The symposium will permit public discussion of an evaluation conducted on a program which has now served 90,000 children in the U.S. over a period of five years, and at a cost in excess of $200 million. The scope and nature of the effort has parallels and continuity with major evaluations of the recent past, notably the Equal Educational Opportunity Survey (Coleman et al., 1966) and the Westinghouse Ohio University evaluation of Head Start (Cicerelli et al, 1969). The evaluation not only adds to our knowledge about the effectiveness of various compensatory education strategies, but also provides lessons on the conduct of large scale evaluation research.

20.10 RESEARCH ON POLITICAL AND SOCIAL-PSYCHOLOGICAL VARIABLES EFFECTING THE ADMINISTRATION OF ORGANIZATIONAL CHANGE (A, SYMPOSIUM)

ROBERT G. OWENS, Brooklyn College, Organizer

Through the presentation and discussion of papers by a multi-disciplinary panel of psychologists, social scientists, and educationists, the symposium will focus on the following principal objectives: (1) exploration of methodological issues and problems in research on the administration of organizational change, (2) critical examination of selected research methodologies and procedures with a view to their potential usefulness for further research, (3) identification and discussion of ways and means that such research may be utilized for improving the practice of educational administration, and (4) identification and discussion of issues and problems encountered in inter-disciplinary approaches to research on the administration of organizational change in educational organizations. The symposium will be of interest primarily because it: (a) addresses a popular area of research in which there is pressing need for improved research design, methods and procedures; (b) presents a multi-disciplinary perspective on the problem-area; and (c) addresses the problem of linking research in specific ways to improving administrative practice.

"Conceptual Models for Research and Practice in the Administration of Change," is the subject of a paper by Robert G. Owens, Coordinator, Division of Specialized Programs, School of Education, Brooklyn College, The City University of New York. Contemporary approaches to research and practice in the administration of organizational change tend to emphasize systematic aspects of the process, focusing on the orderly sequencing of such activities as goal-setting, planning, and execution. This has given rise to efforts to identify and describe overall strategies of organizational change and to explicate the activities that "go with" each of the various strategies as tactics. These strategies and tactics provide useful conceptual models for both the practice of administration and the conduct of research in organizational change. A number of identifiable strategies and tactics of organizational change, drawing upon various orientations to the task, are described and their implications for both administrative practice and research are discussed.

Carl R. Steinhoff and Lloyd K. Bishop, Division of Educational Administration, School of Education, New York University, will present a paper entitled "Organizational Culture and Change in Doctoral Programs in Educational Administration." The findings of a nation-wide study, sponsored by the University Council for Educational Administration, of the organizational culture of selected preparation programs in educational administration are presented. One thousand students and professors in 41 institutions provided data in this survey

research which explored certain perceptions held by the subjects concerning aspects of the environmental press in their institutions and selected individual personality characteristics of the respondents. The relative congruence of the perception of these aspects of the psychological environment of these programs by (1) faculty members, (2) full-time graduate students, and (3) part-time graduate students are discussed in terms of their implications for organizational change.

"Complex Political and Social Psychological Variables that Effect Change in Urban Schools," will be presented by Marcia Guttentag, Ph.D. Program in Psychology, Graduate Center, The City University of New York. Community controlled and non-community controlled school districts in Harlem were studied. A variety of measures were used to determine the social and organizational climate in these schools. The use of school buildings by parents, the administrators' daily schedules, the organizational climate and teacher-pupil interaction patterns in classrooms all indicated that the community controlled schools were strikingly different. The nature of these differences and the political influences on the overall social climate in these schools will be discussed, as well as the significance of this type of research for further studies of large scale social system change in schools.

"Professionalism and Organizational Change," is the subject of Dennis J. Palumbo and Richard A. Styskal, Department of Political Science, Brooklyn College, The City University of New York. One criticism of professionals in public service is that they resist changing the occupational norms that would decrease their power even though it would benefit their clients. In an examination of the relationship between professionalism and change, data were collected from elementary school principals, local school board members and lay members of community health planning. Principals were slightly less inclined than school board members to accept change. The least professional of the three groups, community health members, were the most negative about change. The mixed findings may result partially from the spurious relationship between professionalism and change. Two additional variables were introduced to test this hypothesis: amount of "turbulence" or dissatisfaction among clients and diversity of viewpoints within groups. Controlling for the former variable yielded little difference; however, there was a strong positive relationship between diversity of viewpoints and change. Consequently, group consensus is seen as a major variable in predicting acceptance of change.

"Research Dilemmas in Testing Models for Organizational Change," is the subject of a paper by Julian Roberts, Chairman, Department of Curriculum and Instruction, Ferkauf Graduate School, Yeshiva University. Studies either concentrate on situational variants or specifically relate to differences in interpersonal relationships involved. Difficulties are noted in setting up control groups, the timing of post-measurements, dilemmas caused by focusing on projected rather than desired outcomes, and use of varied intervention techniques. Attempts to derive conclusions are limited because many studies: (1) do not specify conditions under which a relationship between variables is tested, (2) are based on information from one school or one school district limiting generalizability, (3) utilize variables unique to the particular study and/or are non-theoretical, providing little framework for integrating findings from different studies, (4) do not allow for differentiating among behavior patterns by providing limited alternatives and involve one specified behavior, the only other being the absence of the one observed. These studies rely on the participation of involved persons rather than objective others, and often obtain information regarding two or more variables from the same respondents.

24.02 MULTIPLE PUBLICS, PRIORITIES, SCHOOLS, AND UNIVERSITIES: SOME ADVOCATE AND ADVERSARY POSITIONS (B)

DENNIS D. GOOLER, Syracuse University, Chairman

A two-session, audience-involved program is proposed. The focal concern of the first session is to determine in what way and to what extent members of multiple publics served by our schools wish to participate in education decision-making. A second related concern is how such information about the values, needs and priorities of those multiple publics relate to such concerns as teacher professionalism, community control, accountability, and student rights and responsibilities. Following presentation of data about the educational values and priorities of the multiple publics of the school district being studied, and the areas in which people in that district desire to be involved as decision-makers, the panel members will state advocate/adversary positions concerning the implications of such data.

The focal concern of the second session is to determine how well the university complements the public school in fulfilling the educational functions of society, and how, as those functions become more fully described, and the university's role becomes more clearly outlined, the university-public school relationship can be more effectively and efficiently designed and implemented. Data will be reported on the perceived functions of formal, educational institutions in American society, the critical variables affecting university-public school relations, and the function of consultation as an integrating factor in the university-public school relationship.

24.03 SOCIAL PERCEPTIONS OF BLACK STUDENTS (G)

Self-Esteem of Black and White Fifth-Grade Pupils as a Function of Demographic Categorization

JOAN S. BEERS, Pennsylvania Department of Education

Interrelationships among pupil's self-esteem and school's racial and socioeconomic compositions, pupil's sex, and pupil's socioeconomic status were studied. Self-esteem was measured by the Coopersmith Self-Esteem Inventory. Two 3 x 2 x 2 x 2 factorial analyses of variance were computed—one for white Ss and one for black Ss. Data were analyzed for 2,753 white Ss and 550 black Ss from schools throughout Pennsylvania. Main effects for both black and white Ss were significant ($p < .05$) for school's racial and socioeconomic compositions and pupil's socioeconomic status. Two two-way interactions were significant for white Ss.

Expectations in Mixed Racial Groups of Children

DORIS R. ENTWISLE

Research was undertaken on how status characteristics of adults and children affect adults' ability to raise a child's expectations for his own performance at school-like tasks. White adults are effective at raising expectations of white children *or* black children in mixed racial work groups; black adults are effective with black children but not with white. These results, both consistent and inconsistent with previous findings, are interpreted in light of children's previous contact with members of the opposite race. Unlike most research on desegregation effects, this research examines both black children's and white children's reactions to black adults.

Is Nursing a Viable Career for Blacks? (A Study of Black and White Freshman Nursing Students)

MICHAEL H. MILLER, Vanderbilt University

It has been suggested that under-representation of blacks in professional nursing results from insufficient black-nurse role models. This study of 331 black and white freshman nursing students in three associate degree programs argues that blacks have similar interests in nursing as whites. The results show that the black and white nursing

students exhibit few differences regarding their values, orientation, and perception of nursing. The few observed differences were attributable to socio-economic variation between races. Discrimination by schools of nursing, rather than a lack of role models, is suggested as the major barrier to blacks becoming registered nurses.

A Dialect Differentiation Measure for Nonstandard Black English

CAROL W. PFAFF, SWRL

A quantifiable, easily administered measure of nonstandard black English (NBE) was developed for use with children four- to six-years-old. The instrument consists of tasks designed to elicit spontaneous utterance of linguistic features which characterize NBE. In a study of black and Anglo children in schools serving lower and middle income populations, the instrument successfully identified speakers of NBE. The results compared favorably with repetition and story telling tasks. The instrument is suitable for identifying pupils who would benefit from instructional materials that circumvent learning difficulties related to language differences.

A Comparison of the Degree, the Nature, and Some of the Causes of Manifest Anxiety in Children from Different SES and Racial Backgrounds

BRUCE J. YASGUR, The School District of Philadelphia

Lower-SES and black sixth-grade pupils manifested significantly higher anxiety than did their middle-SES and white counterparts on the General Anxiety Questionnaire. All subjects were also given the GAQ as a checklist, assessing their perceptions of the frequency of stressful stimuli in their environments. A sample was interviewed individually, to assess the children's perceptions of the quality of stressful stimuli in their environments. Lower-SES, particularly black children, reported a far greater concern with physical harm than did their middle-SES, particularly white, counterparts, who reported more concern with academic and social success. It was concluded that manifest anxiety in lower-SES children incorporates fear of real danger in addition to anxiety. The anxiety manifested by middle-SES children was viewed as being more related to parental and social expectations.

24.06 PERFORMANCE-BASED TEACHER EDUCATION: ISSUES AND STRATEGIES (C, SYMPOSIUM)

DAVID A. POTTER, Educational Testing Service, Organizer

This symposium is designed to provide a forum for an informed and informative discussion of some of the problems facing performance-based teacher education as viewed by representatives of several different segments of the educational community. Teachers, teacher educators, educational administrators, state certification agencies, and educational researchers look at teacher education from viewpoints that are at times widely divergent. This symposium will examine these viewpoints, together with an approach to PBTE that is responsive to the needs of these different groups without sacrificing its validity.

The viewpoint of the organized teaching profession will be presented by Sandra Feldman, Assistant to the President of the United Federation of Teachers and UFT's Committee on Performance-based Teacher Education. The UFT has recently taken a formal position regarding PBTE. Although they support the movement, they are concerned because: (1) An adequate knowledge base upon which to build performance-based programs does not exist. A great deal of research will be needed in order to develop this knowledge base; until adequate research has been completed, and the knowledge base accordingly strengthened, organized teaching will oppose PBTE. (2) Teachers fear that they will be evaluated in performance-based programs on the basis of factors which are not within their control. They are willing to be evaluated on the basis of their classroom behavior only to the extent to which they are allowed to control that behavior; when that behavior is under the control of other factors (e.g., administrative policy or other systemic constraints), teachers refuse to be held accountable for that behavior. It is apparent that before the organized teaching profession will support PBTE, two basic conditions must be satisfied. Research must be conducted in order to determine those patterns of teacher behavior which are related to student achievement, and teachers must be given the right to control their own classroom behavior so as to use these behaviors effectively.

Robert Houston, University of Houston, will discuss program development in performance-based teacher education from the point of view of a teacher educator. Objectives lie at the heart of performance-based teacher education; a central concern of these programs is specifying in advance precisely what a student is expected to be able to do at the end of the course. "Performance-based" refers to the way in which teachers demonstrate teaching knowledge and skills. That demonstration is observable (and their objectives are to "write," "do," "describe," not "understand," "perceive," etc., which are nonobservable). Furthermore, the emphasis on performance reminds us that knowledge of content and teaching strategies are not sufficient in teaching—overt acting is important. Performance-based teacher education programs may differ from traditional programs in other respects (e.g., field-based, modularization, individualization), but the essential element of a performance-based program is emphasis on teaching the student what he needs to do as a teacher in order to facilitate educational growth and change in students.

Theodore Andrew, Associate in Teacher Education in the New York State Department of Education, will discuss performance-based certification. Analysis of the problems the state faces when it attempts to initiate a performance-based certification system will be presented. Distinctions will be made between the problems of performance-based teacher education programs and performance-based certification policies. Descriptions of various state approaches to on-going performance-based certification policies will be included. Further discussion will be directed toward some of the political problems involved in placing certification of teachers on a performance basis.

Research strategies aimed at providing the knowledge base for successful implementation of performance-based teacher education will be discussed by David Potter, Educational Testing Service. The development of reliable, objective, valid measures of teacher behavior—a performance-based teacher assessment system—will be discussed as the central focus of this research strategy. Without such a system we cannot hope to learn what patterns of teacher behavior are related to student achievement; this knowledge is essential if performance-based teacher education is to fulfill its promise. The second major point of the discussion will be the need to coordinate research, development, and program evaluation in PBTE.

Frederick J. McDonald, Educational Testing Service, will present a plan for a National Commission on Research and Development in Performance-based Teacher Education. The National Commission, a project funded by the Rockefeller Brothers Foundation, can provide the centralized planning, coordinating, and facilitating effort necessary to build the knowledge base that is so urgently needed if PBTE is to become a valid approach to teacher education. Without such a knowledge base, PBTE will meet with the opposition of the teaching profession and will provide slight improvement over traditional methods, but if the movement is built upon a solid foundation of research and development, we may at last be able to train teachers to teach—that is, we will be able to train them to act in ways that produce desired educational change in students.

This symposium will provide the opportunity for a free and open discussion among diverse segments of the educational community with regard to the performance-based teacher education and certification

movement. Basic obstacles to the movement will be discussed, as will methods for moving toward PBTE in ways that can surmount these obstacles. The central importance of the PBTE movement in American education today is evidenced by the increasing number of teacher education programs that are moving toward a performance base and by the number of states which have either enacted legislation relevant to performance-based teacher education and/or certification or whose state certification agencies have made policy decisions which will accomplish similar ends.

25.01 RESEARCH, DEVELOPMENT, AND EVALUATION LEADING TO A SYSTEM OF INDIVIDUALLY GUIDED MOTIVATION (C, SYMPOSIUM)

DOROTHY A. FRAYER, Hofstra University, Organizer

In 1963 the Research and Development Center Program was established. One goal of this program was to improve the relationship between the production and utilization of knowledge (Boyan & Mason, 1968). To achieve this goal, R & D Centers were to: (1) conduct basic and applied research studies, and (2) conduct development activities designed to translate systematically research findings into educational materials or procedures, and field test the developed products (U.S. Department of Health, Education, and Welfare, 1963).

Although R & D Centers have carried out all of these activities—research, development, and evaluation—with a large measure of success, few Center products have, in fact, progressed through all of these stages. This is understandable, since R & D Centers have been in operation less than eight years. It is of interest, however, to examine the relationship between the production and utilization of knowledge in a case where research, development, and evaluation have been carried out on a single Center product, Individually Guided Motivation (IGM).

Motivation is a major concern of teachers. In some classrooms, few children are motivated to learn, and the result may be misbehavior and disruption of classroom activities. Even in classrooms where most children are motivated to learn and behave well, teachers can usually identify some children who are not paying attention to school work or achieving well in any subject matter area. The need for effective procedures to increase motivation is acute.

The objectives of this symposium are twofold: (1) to describe a system of individually guided motivation which has been developed to encourage the growth of positive motivation in children and meet the unique needs of each child, and (2) to describe the interaction of research, development, and evaluation in producing IGM, noting the problems encountered and deviations from the linear research → development → evaluation model.

"Overview of Individually Guided Motivation," by Herbert J. Klausmeier, Wisconsin R & D Center for Cognitive Learning, will outline the theoretical background for IGM, including motivational principles derived from the research literature and instructional guidelines presumed to call these principles into play. The unique capability of an R & D Center to translate this theory into tested motivational procedures will be described. This capability results from interdisciplinary staffing, support personnel, and from stable and extensive relationships with school systems.

John P. Gaa, University of North Carolina, will present, "The Research Base of Individually Guided Motivation." A first version of each of several motivational procedures was compared with a control to determine whether the procedure was effective. Subsequently, more analytic research was carried out to refine the procedures. For example, in the case of goal setting as a motivationall technique, individual conferences with and without goal setting were compared. Reinforcement was given either for achievement or for goal-setting accuracy. Conferences were held with elementary and high school age children. The effects of goal setting on attitude, goal setting accuracy, self-esteem, and locus of control were examined as well as its effect on achievement. A brief description of each of the research studies related to IGM will be presented to show the basis for the motivational procedures which were subsequently developed.

Dorothy A. Frayer, Hofstra University, will present, "The Development of Individually Guided Motivation." Based on research, a system of individually guided motivation was developed, consisting of an integrated set of four motivational-instructional procedures: (1) Adult-Child Conferences to Encourage Independent Reading, (2) Teacher-Child Conferences for Goal Setting, (3) Guiding Children as Tutors, and (4) Guiding Children Toward Self-Directed Prosocial Behavior. Inservice materials, five films and a book, were developed to teach these procedures. A description of the procedures and the inservice materials will be given, and a short segment of one of the films shown. Problems encountered in translating research results into usable classroom procedures will be delineated. Evaluation of the motivational procedures indicated that the inservice materials were not self-contained, and that a Center-conducted inservice program for representatives from local schools was necessary to insure successful implementation of IGM. This inservice program will also be described.

Mary R. Quilling, Wisconsin R&D Center for Cognitive Learning, will present, "The Evaluation of Individually Guided Motivation." Crucial to the development of an effective educational product is a well-designed evaluation. This evaluation should be formulated to answer relevant research questions as well as to provide information concerning the effectiveness and usability of the product. In the case of the evaluation of independent reading conferences, for example, the field test was designed to determine the effect of the introduction of new, attractive books on amount of reading, apart from the effect of the conferences themselves. The long-term effect of conferences was assessed by continuing conferences for some students, discontinuing them for others, and comparing the performance of the two groups. Each field test related to IGM will be described, summarizing the research questions posed and the formative information gathered in addition to the overall evaluative results.

The symposium will provide information about motivational procedures based on theory and research which have been translated into usable, effective classroom techniques. In addition, the symposium will describe the research, development, and evaluation processes which led to these procedures.

25.02 PROBLEM SOLVING MEASUREMENT AND TRAINING PROCEDURES (C, EXPERIMENTAL)

J. KENT DAVIS, Purdue University, Chairman

This discussion session had as its main emphasis theoretical conceptions and criteria for the development of problem solving measurement and training procedures. Recently there has been a wide variety of contradictory approaches to measurement and training which emerged from research. Evaluation and synthesis of the completed research is needed to provide guidelines for new research and development of problem solving measurement and training tasks.

25.03 ACCOUNTABILITY: PROBLEMS AND POSSIBILITIES (C, SYMPOSIUM)

RICHARD OBER, University of South Florida, Organizer

The purpose of the symposium is to take a comprehensive, indepth look into the general subject of "accountability" from the researcher's point of view—that is, in a logical, systematic fashion, to trace accountability from its basic, theoretical foundations though its operational phases involving field research and implementation to the implications that are naturally and inherently raised for those who are

commissioned with the preparation and supervision of teachers. In keeping with this basic purpose, it should be noted that the title selected for the symposium—"Accountability: Problems and Possibilities"—is purposely general in scope, but that the four papers, while they comfortably fit within the parameters of the title, are not only more specific in title (scope), but logically lead in text from one to the other, each subsequent one building on the previous.

"Teacher Competency: To Do What?," presented by Donald Orlosky, University of South Florida, will treat the theoretical underpinnings of accountability, particularly in the area of specifying the competencies to be employed in the evaluation of the individual teacher's effectiveness. Contingencies and factors that bear on and influence the selection of competencies are discussed. The point stressed is that it is virtually impossible to prepare teachers adequately to perform "competently" if those competencies are not properly delineated and clearly stated. In turn, unless accountability policies and accompanying procedures are brought under reasonable control in this way, we are left in disarray with respect to the overriding intent of accountability—to hold a teacher responsible for his pupils' learning.

Such factors as research findings, school board opinions, state boards of education policies, the "law of the land," general practicality, material/plant resources, and time and space are discussed as they bear on competency/accountability decisions.

"Problems in Accountability and the Measurement of Pupils" will be the topic discussed by Robert Soar, University of Florida. Perhaps one of the most significant relevations of this paper is a recent finding of Soar which indicates that a sizeable number of nonlinear relationships between pre-post gain scores of pupils are found when measured by newer, nonstandardized instruments (yet valid and reliable). When instruments/procedures of this sort are used, the fit for pupils at both the high and low ends of the scale tend to be thrown seriously out of line to the end that they exhibit difficulty in showing any significant gain while the average students seem to generate normal, expected gains. It has also become fairly evident that a number of pupil characteristics tend to grow at a painfully slow rate so that it becomes almost impossible to realize an appreciable gain in the relatively short space of a year or two. One suggested resolution is to identify a reasonable, manageable number of pupil growth measures that have been found to be related to specific, measurable teacher behaviors and to build accountability programs that are predicated more on teacher behavior than on pupil growth factors.

"Assessing Product Measures Using Systematic Observation" will be presented by Sam Wood, University of Missouri. This presentation is rooted in several years of research designed to measure the behavior of teacher and pupils using more than a single technique simultaneously, each assessing a different dimension of the interaction (multidimensionality). One promising outcome of these findings is the possibility of measuring pupil growth by means of observational systems. Not only does this technique reduce the amount of reliance placed on paper-pencil instruments, but is far more descriptive since it assesses pupil behavior (growth) *during* the learning process, over a longer *duration* of time, and at *several* subsequent intervals rather than a single assessment.

Furthermore, the notion of systematic observation tends to open up the parameters of growth measurement. Pupils can be observed/assessed as they behave and interact in a natural, relatively threat-free situation. Finally, techniques of this sort complement the whole spirit of self-evaluation and self-improvement as these relate to teacher competence and accountability since the teacher is given "handles" for controlling his behavior.

"Preparing Teachers to Teach in the Age of Accountability," by Richard Ober, University of South Florida, will pull together the ideas purported in the previous three. It relates the basic notion of accountability to the preparation and supervision of teachers within the limits of accountability. The paper discusses such questions as: (1) What competencies are the responsibility of preservice education? of inservice education? (2) What is the role of supervision in teacher accountability? of the individual? (3) What is the role of laboratory/field experiences in the preparation of a teacher? (4) What is the nature of the internship as it is affected by the accountability movement? (5) How can a candidate for teaching be adequately prepared to carry on a continuous program of self improvement throughout his career? These and similar questions are discussed in the light of the current accountability press.

25.04 COMPUTER BASED INSTRUCTIONAL DESIGN (B, SYMPOSIUM)

DAVID B. THOMAS, HUMRRO, Organizer

The computer has been used to facilitate individualized instruction through the presentation of materials, the managing of students and resources, and the recording of progress and achievement. The purpose of this symposium is to describe another use of the computer, namely a computer-based instructional design system. The presentation will describe, from various perspectives, computer assistance with the systematic development of instruction, the software which supports the user's requirements, and implementations of computer-based instructional design processes.

Within the past five years, great strides have been made in time-sharing computer technology, individualized instruction, and computer-based education, including computer-assisted and computer-managed instruction, administration, and instructional simulation and modeling. During the same time period, similar strides have been made in computer applications software which could support the instructional materials authoring, production, and evaluation process.

The ideal system proposed is not a CAI system. The description of a computer-based materials authoring and production system rather than a system in which a computer either presents materials or manages students or teachers will be given.

The application of a time-sharing computer for design, development, production, evaluation and revision of instructional materials will be discussed by David Thomas. The discussion will focus on those aspects of computer technology which may be employed to aid in instructional resource preparation and the extensions which may be made to existing applications to enhance the process. The systems approach to the design of instruction includes steps to identify tasks, hierarchical structures, and media, and steps to undergo formative and summative evaluation and revision of the materials. Each activity in the described approach entails a large amount of manual searching, transcription, and analysis of both verbal and numerical data. Automated and interactive approaches to all of these procedures are possible with existing computer technology, but have not been utilized in the educational materials development process.

Dewey Kribs will discuss "Software for a Computer-Based Systems Approach," emphasizing the software functions which are of special use to the instructional designer. Each step in the systems approach will be described in terms of the software capabilities required. These include editing, storage of such instructional design data as test items, objectives, strategies, and tasks analysis, interactive search and analysis of instructional materials, and student response data collected interactively during "on-line" testing. Given these software functions, an ideal system will be described. Since such a system is not currently available, general purpose software which is typically available on commercial systems will also be discussed. Identification of these software packages will facilitate implementation of computer-based systems at minimal cost when general-purpose computer systems, especially time-sharing systems, are accessible.

J. Howard Bryant will address the relationships between jobs, training, and the functional personnel process. He will describe the concept of a cybernetic process which begins with activity and skill

analysis and produces job description and performance evaluation information on the one side, and training requirements, learning objectives, on the other. The process is self-regenerating when implemented as a computer-based personnel and training subsystem. Dr. Bryant will present empirical data to illustrate how the process was developed and implemented for a large organization requiring highly skilled data processing specialists in a dynamic technological environment.

25.07 HUMANISTIC TEACHER EDUCATION (C)

A Humanistic Model for Teacher Education

C. KENNETH MURRAY AND RONALD IANNONE,
West Virginia University

Many teacher-education institutions are producing human illiterate teachers who find it increasingly difficult to cope with a rising generation of youth who are "tuned in" to human encounters. A new teacher who is human and real needs to be born—one who can integrate the skills of teaching into his life style and help students grow not only intellectually, but also as human beings. It is within this framework that the West Virginia University Humanistic Teacher Education Model was developed. A number of studies whose purpose was to research the existential and perceptual rationale underlying the humanistic orientation of the model have been done.

The Effect of Two Humanistic Models of Teacher Education upon the Perceptions of Prospective Teachers

ROBERT ZEGLER, West Virginia University

The two time arrangements investigated in this study demonstrated a statistically significant effect upon the overall perceptions of the two groups of prospective teachers. This difference favored those prospective teachers who participated in the intensive five week humanistic methods program prior to student teaching.

The Effect of a Humanistic Training Model on the Perceptions of Elementary Teachers-in-Training

WILLIAM BINGMAN, Frostburg State College

Evidence was generated in this study which indicates that measuring overall perceptions may not be as important as the task of measuring and clarifying the individual needs of the prospective teacher prior to student teaching.

The Effect of Preservice Creativity Training in a Humanistic Program on Creative Abilities and Perceptions of Prospective Teachers and Their Pupils

EDWARD WILSON, West Virginia University

Data analyses indicate that prospective teachers improved in fluency and flexibility during the training period and in originality and personal worth during student teaching. They and their pupils declined in perceived relationships during student teaching. During this period the pupils also improved in fluency, flexibility, and originality.

The Effect of Field Participation and Humanistic Classroom Experiences upon the Perceptions of Prospective Teachers

ROBERT BARTOS, Hobart and William Smith Colleges

The evidence of this study shows significant trends toward a concurrent arrangement of both field experiences and classroom experiences for prospective teachers as a means of effecting perceptual change at an earlier period in the teacher education program.

The Effect of Humanistic Training in Helping Relationships for Cooperating Secondary School Teachers upon Selected Perceptions of the Teachers and Their Student Teachers

JOHN MULLENNEX, West Virginia University

The results of this study suggested that prospective teachers who participated in student teaching with cooperating teachers who were humanistically trained in helping relationships desired more praise and perceived more suggestion giving from their cooperating teachers than prospective teachers who participated in student teaching with cooperating teachers not so trained.

25.08 PREDICTION OF SCHOOL ACHIEVEMENT (C)

Multivariate Prediction of Early School Achievement

DAVID M. SHACK and STEVEN V. OWEN,
University of Connecticut

While many studies have predicted elementary school achievement, few have investigated both cognitive and biographical predictors simultaneously in a multiple regression format. The present study used both types of variables in predicting achievement over a 20 month span. Criterion variables consisted of Stanford Achievement Test subscores, and a composite Stanford score, collected at the end of the first grade. Shrunken R's ranged from .60 to .76. Sex of student was the only biographical variable which consistently entered optimum prediction batteries. Implications for "sex" as a moderator variable, and preventive programs for predicted low achievers are discussed.

Classroom Achievement as a Function of Student-Teacher Interaction

LARRY J. ALEXANDER, University of Arkansas,
ROBERT S. MEANS, West Chester State College,
BILLY F. ELSOM, Oklahoma State University, and
GLADYS H. MEANS, Cheyney State College

Forty Ss enrolled in a graduate course in audio-visual techniques were rank ordered by past grade point average. The median break was used to form two groups. High GPA and Low GPA Ss within each group were randomly assigned to two treatments. Treatment I Ss were treated politely by the instructor, but with no personal interest. Treatment II Ss were referred to by name, and the instructor initiated discussion with these Ss. A 2 x 2 ANOVA design was employed to analyze student performance on the first teacher-made achievement test. Results indicated significant differences on treatment and GPA, but no significant interaction effect.

The Influence of Differential Feedback on Achievement of Old and New Materials

ROBERT S. MEANS, West Chester State College,
BILLY F. ELSOM and RICHARD BEATTIE, Oklahoma State University and GLADYS H. MEANS, Cheyney State College

Subjects (N-48) enrolled in an undergraduate educational psychology course were rank ordered on cumulative grade point averages (GPA's). They were divided into two equal groups and designated as High GPA or Low GPA Ss. Members within these groups were then randomly assigned to treatments. Treatment I Ss received delayed feedback concerning their performances on a class examination, while Treatment II Ss received immediate feedback. Analysis of later achieved scores on both old and new material indicated no significant differences on either treatment or interaction. In both analyses High GPA Ss achieved significantly higher scores than did Low GPA Ss.

The Effectiveness of Five Selection Policy Variables in Predicting Academic Achievement in a Nursing School

DOROTHY I. WHITE, St. John's Hospital, and
LAURA D. HARCKHAM, Manhattan College

This study tested whether entrance variables used by a nursing school can predict achievement the first year. Ss were 48 female students. Five predictive variables were high school grade point average, Scholastic Aptitude Total of Entrance Examination for Nurses (SAT), CEEB, number of academic credits, and number of failures, all from high school records. Pearson r's were computed. The best predictor was number of credits, .76. SAT, designed for prediction, proved to be inefficient. The academic credit variable may reflect motivation, and the other correlations may have been depressed by the narrow range of nursing school grade point average.

25.09 THE COLLEGE AND UNIVERSITY CONTEXT AND STUDENT/FACULTY ATTITUDES (G)

Prejudicial Attitudes of Danish Students: Some Educational Implications

ERNEST A. CHAPLES, WILLIAM E. SEDLACEK and
GLENWOOD C. BROOKS, Jr., University of Maryland

This study examined the attitudes of 274 white Danish university students toward blacks (negers) and Mediterranean foreign workers (sydlandsk fremmedarbejder) in an experimental study. Results of two-way analyses of variance (.05 level) and Sheffe post hoc comparisons (.10 level) indicated that white Danes were consistently pro-black but had strong negative feelings toward Mediterranean foreign workers. Danish students felt toward Mediterraneans much as white American students felt toward blacks. The writers conclude that the concept of a culturally relevant outgroup appears generalizable across cultures. The findings appear useful to researchers and educational planners.

Young Black Radicals: Is Education Acting as a Stimulant to Black Revolutionary Thinking?

MICHAEL N. HALSTEAD and
PAUL R. DOMMERMUTH

This paper tested hypotheses concerning the relationship between educational levels of young black men and women, their degree of radicalism, and their degree of positive black identity. Data based on interview data from New Orleans, Louisiana was examined. The positive correlation found between high educational level, strong black identity, and radicalism indicate the need for major changes in our conception of the black middle class as a photocopy image of the white middle class community. These findings have important implications for teacher training.

Ambiguities in Race Relations: Blacks and Whites in Higher Education

The interpersonal problems of black professors in white colleges and universities are discussed. Prejudice and status dilemma lead to a social disjunction which is not mitigated by the joint participation of blacks and whites in common institutional settings. Evidence is presented affirming the validity of this proposition. An anthropological perspective based on the work of Radcliffe-Brown leads to the following hypothesis: blacks outside the area of black studies engage in joking, while blacks in black studies engage in the functional alternatives of formality and avoidance in order to prevent conflict and hostility with whites due to disjunctive interests. The hypothesis is confirmed. The data is primarily quantitative; in addition, a content analysis of joking remarks of black and white faculty is presented.

The Effect of College Proximity upon Rates of College Attendance

VINCENT TINTO, Teachers College, Columbia University

The results of a study to determine the effect of college proximity upon rates of college attendance of over 19,000 high school graduates in Illinois and North Carolina are given. Results of cross-tabular and multivariate dummy-variable regression analyses question both the assumption that college proximity *per se* is an important factor in college-going, and the belief that establishment of public junior colleges will help equalize educational opportunity by providing higher educational access to able children of low status families. In both states, only persons of lower ability gained in attendance when living within a public junior college community.

Undergraduates' Expectations and Perceptions of a College Environment

JOHN C. WEIDMAN and DAVID J. KRUS,
University of Minnesota

Data from a survey of seniors in the College of Education at the University of Minnesota indicate that the more conventional the expectations of the student and the more extensive the interaction with faculty, the more likely he is to view the college environment in a positive way. Findings are similar for both men and women. Results are interpreted with respect to their contribution to the social psychology of formal organizations—the impact of participants' expectations on their perceptions of an organizational environment.

25.10 THE POLITICAL CONTEXT OF SCHOOL POLICY (G)

Personal and Institutional Characteristics Affecting Teacher Mobility

ANNEGRET HARNISCHFEGER, Stanford Center for Research and Development in Teaching

The major purposes of this study were to identify the effects of personal characteristics of teachers and institutional characteristics of schools on teacher mobility. The methodology involved multiple regression analyses of mobility measures on personal characteristic variables and on institutional characteristics with control for personal characteristics. The data were derived from school and teacher records in two California School Districts over a four year period. Both personal and institutional characteristics were found to affect teacher mobility. Some policy implications of these findings are discussed.

Teacher Characteristics and Collective Bargaining Militancy

CHARLES B. KEELY, and
R. GREG EMERTON, Western Michigan University;
DIANE L. KEELY, Fordham University

An attempt to develop a predictive model of teacher militancy using the Automatic Interaction Detection technique is described. By employing teacher background characteristics and attitudes toward teaching, the resulting model explains a significant amount of the variation in the degree of teacher militancy in a medium size, midwestern city with a NEA affiliate as collective bargaining agent. In addition to model development, the findings of this study seriously question the often

assumed proposition that union militancy is inimical to the professional status of teachers.

Relationships of Economic, Social, and Educational Attitudes to the Outcome of a School Bond Issue: An Investigation of Voter Values and Voting Action

JAMES M. MAHAN, Indiana University

Utilizing a school bond issue, relationships between expressed personal attitudes of yea-voters, nay-voters, and non-voters and their overt (known) voting behavior were examined. Traditional-emergent, politico-economic, and curriculum-facilities attitudes were surveyed, interrelationships identified, and predictive value relative to voting behavior discussed. Bayesian conditional probabilities, omega squares, point biserial correlation coefficients, *t* tests, etc. were employed. Negative voters held more conservative attitudes than affirmative voters and non-voters. Responses to more specific attitudinal scales, and to selected facilities items, correlated more highly with actual poll behavior. Predictive relationships between expressed attitudes and voting behavior were judged tenuous.

The Role of Labor Unions in the Politics of School Decentralization in New York City and Detroit

MARVIN R. PILO, Teachers College, Columbia University

This paper is an exploratory comparative case study which examines and analyzes the behavior of labor unions, with emphasis on teacher unions, as political actors in the implementation of school decentralization in New York City and Detroit. It also evaluates the effects of school decentralization on those unions. With elite interviews as its primary source of data, the study finds almost complete success on the part of the teacher unions in protecting the traditional job security rights of teachers under a decentralized school system, a result achieved, in both cases, by extensive participation in the legislative and electoral arenas.

25.11 FEEDBACK AND REINFORCEMENT (C)

Interaction between Reward Preference and Task Difficulty in a Computer Assisted Instruction Setting

DAVID P. YENS,
University of Delaware

The interaction of an incentive variable (preference for reward) with task difficulty was evaluated in a CAI environment. Elementary school students worked arithmetic problems presented via computer terminals with the expectation that if they did well they would receive a reward of high or low rated preference or no reward at all. Four percentage ranges of difficulty were used for the problems. Measures of persistence were time spent on the task and number of problems attempted. The expected finding of an interaction was not supported, but limited support was obtained for the differential motivational value of incentive preferences.

Interactive Effects of Motivation and Rates of Feedback in Concept Learning

JAMES M. PETERSON and
FRANK H. FARLEY,
University of Wisconsin, Madison

Resultant Achievement Motivation scores for 60 female college students were computed from achievement motivation and test anxiety measures. These Resultant Achievement Motivation scores were employed as predictors of performance under conditions of differing rates of informational feedback in a concept learning task. Resultant Achievement Motivation was found to be significantly positively related to the rate of learning in a 100% feedback condition. No significant relationships were found in the 50% feedback condition. The findings of this study bear directly upon achievement motivation theory and suggest the necessity of modifying some traditional notions concerning the role of informational feedback in learning.

Order and Scheduling Effects on Reinforcing On-Task Behavior in the Classroom

DAVID R. BUCKHOLDT and
DANIEL E. FERRITOR, CEMREL, Inc.

The objective of this work was to investigate the differential effects of fixed and variable reinforcement contingencies on student attending behavior. A reversal design was used. In the first study, a no reinforcement condition was compared with a procedure where children were reinforced in a standard order and then in a random order. In the second study, a no reinforcement condition was compared with both fixed and variable schedules of reinforcement. The random reinforcement procedure produced the highest percentage of on-task behavior in the first study, and the variable-interval was superior in the second.

Feedback and Instruction: A Review and Suggestions for Further Research

NORMAN C. HIGGINS, Arizona State University

Much of the research on feedback in cognitive learning tasks is of limited applicability in designing instructional products. Studies using systematically designed instructional sequences to investigate feedback variables were reviewed. An analysis of the feedback literature relevant to instructional situations suggests several variables whose further study may contribute to the design of more effective instructional products. These variables include: (1) the amount of information contained in the feedback stimulus, (2) frequency of feedback, (3) immediacy of feedback used, and (4) the interaction between feedback and incentives for acceptable performance. Literature related to each class of feedback variables is reviewed and suggestions for future research described.

Incentives for School Achievement

KAREN F. A. FOX, American Institutes for Research

While reinforcement techniques are widely used to alter classroom behavior, their effect on achievement has not been as well documented. Three hundred elementary school students received material incentives for mastery of individually prescribed reading objectives during four eight-week earning periods. Three incentive treatments were employed. Analysis of pre- and post-treatment results on the California Achievement Tests and on criterion-referenced reading tests indicates (1) that students achieved mastery of their objectives, and (2) that they made significant gains on the standardized tests. Subsequent refinements of treatments should provide a basis for assessing the relative effectiveness of the three incentive treatments.

25.14 MEASUREMENT METHODOLOGY I (D)

An Experimental Evaluation of New Measures of Cognitive and Noncognitive Performance for Elementary School Children

JOHN A. EMRICK, Stanford Research Institute

Two experiments to develop psychometric and administrative data on instruments designated for a testing program with disadvantaged

elementary school children were undertaken. These instruments provide measures of growth and development in such diverse areas as verbal expressiveness (the ITPA and the Hertzig/Birch scoring of the PSI), problem solving (Raven's Progressive Matrices), self-esteem (Faces and Coopersmith), and achievement motivation (Gumpgookies and Locus of Control). Both experiments involved test-retest assessments of reliability, and factorially balanced assessments of tester effects. The results are discussed with regard to reliability, validity, and suitability of these instruments within and across grade levels K-3.

Effect of Differentially Motivating Instructions on the Predictive Validity of a Test Device

BRUCE W. HALL,
T. SALVATORE TOCCO, and
LARRY SCHWARTZ, University of South Florida

Research examined the hypothesis that predictive validity would be greater for a test given under stress instructions than for a test given under relax instructions. Ss were 254 education students in a graduate measurement course and 117 education students in an undergraduate measurement course. Ss were randomly assigned to the instructional conditions. For the graduate and undergraduate data separately, a Pearson r was computed between pretest and final exam scores for each treatment group. On both graduate and undergraduate levels, the difference between the r's was significant ($p < .05$) in the predicted direction, suggesting the usefulness of a stress dimension for enhancing predictability.

The Relationship of Aptitude Test School Means and School Socioeconomic Characteristics to Achievement Test School Means

DOUGLAS J. McRAE, CTB/McGraw-Hill

When interpreting the results of a norm-referenced testing program, the availability of several expectations of test scores is desirable. Toward this objective, academic aptitude test data (the *Short Form Test of Academic Aptitude*) and school socioeconomic data were collected from the participants in the 1970 standardization of the *California Achievement Tests*. Multiple regression analyses were performed to relate (1) the SFTAA school means, and (2) the school socioeconomic data to the CAT school means. Comparative results were presented. The conclusion was that achievement test school means may be predicted quite accurately from both aptitude test school means and school socioeconomic data.

Validation of a School Behavior Rating Scale

ROSALYN A. RUBIN and PATRICIA H. KRUS,
University of Minnesota

A study was conducted to validate a school behavior rating scale on a sample of 1,153 elementary school children. Results indicate stable means and variances over grades kindergarten through fifth-grade and a stable factor structure. Sex differences on behavior ratings favored females over males at all grade levels. School behavior ratings obtained by subjects for whom special action, such as special placement or receipt of special services, had been taken by the schools were significantly lower than the mean score of those for whom no such actions had been taken.

A Quick Screening Test to Predict Future Academic Failure in Kindergarten Children

NANCY Z. SPARBERG, Loyola University,
GLEN R. THOMPSON, Northeastern Illinois University, and
SAM MIKAELIAN, Wilmette Public Schools

An experimental screening device designed to predict future academic failure in kindergarten children was administered to a group of kindergarten children in April. The prediction of success or failure made on the basis of the screening was correlated with the results of standardized reading readiness tests, as well as standardized achievement tests in first- and third-grades, and with chronological age. The point biserial correlations between predicted success-failure and actual achievement in reading and arithmetic were significant at the .01 level. Correlations between age and achievement were not significant. The efficiency was 100% and the effectiveness was 82%.

25.16 ASSESSING CHANGE IN EDUCATION (A)

Changes in Organizational Climate Associated with Development and Implementation of an Educational Management System

LEWIS A. BONNEY,
San Bernardino City Unified School District
San Bernardino, California

The development and implementation of a humanistic Educational Management System in a large urban school district has been associated with demonstrable changes in organizational climate. The Management System is humanistic in that teachers and principals select their educational priorities based on student needs and mutually agree with supervisors regarding expected student learning. It is systematic in that measurable objectives are identified and feedback is regularly collected regarding program progress and results. Application of the Educational Management System in the District's 56 schools has coincided with statistically significant changes in each dimension of organizational climate measured by Likert's (1967) "Profile of Organizational Characteristics." These changes in organizational climate remained intact during the second operational year.

The Effect of Technology on Organizational Task Structure

DAIVD L. PAGNI,
California State University, Fullerton

Technology is viewed as a significant independent variable of the organization, affecting the organizational task structure. Viewing the classroom as the unit of observation, a technological change is introduced in the form of electronic computers to teach mathematics. Organizational task structure is defined in terms of teacher-pupil interaction as it relates to the "work" of the organization. An attempt is made to measure changes in task structure corresponding to the change in technology.

The Profile of a School and Measurement of a Multi-District Organizational Change Program

FRED C. FEITLER,
Southern Tier Regional Office for Educational Planning
Elmira, New York

Modern organization theory and research from business and industry predicts that schools which change toward the Likert-participative group organizations will increase productivity. This paper reports interventions of a one year organization development program carried out with 12 schools and the change results measured by the Profile of a School. Pre- and post Profile means are compared, with total means showing significant change in the desired direction. Both the Profile, as a means of measuring organizational change, and the O.D. strategy employed have direct implications for further research and application to educational change programs.

25.17 STATISTICS: MULTIVARIATE PROCEDURES (D)

Comparison of Algorithms for Common Factor Analysis Using Maximum-Likelihood Estimation

MICHAEL PATRICK HAGERTY,
University of Massachusetts

Six algorithms for minimizing the function of the Maximum-Likelihood criterion in the unrestricted common factor analysis model were compared for computational efficiency. Included in the six were two new algorithms, a quasi-Newton by Powell (1971), and a pure Newton by Swaminathan (1972). Factor analysis is one of the more frequently used statistical techniques in educational research. Maximum-Likelihood has been demonstrated to be the superior method for parameter estimation in factor analysis, although it has not yet come into common usage. The selection of a computationally efficient algorithm should greatly facilitate its usage.

The Computation of Orthogonal Independent Cluster Solutions and Their Oblique Analogs in Factor Analysis

RICHARD J. HOFMANN,
Miami University, Oxford, Ohio

A very general model for the computation of independent cluster solutions in factor analysis is presented. The model is discussed as being either orthogonal or oblique. Furthermore, it is demonstrated that for every orthogonal independent cluster solution there is an oblique analog. Using three illustrative examples, certain generalities are made with respect to the class of independent cluster solutions which are generated by the orthomax criterion. A procedure is presented for comparing the simple structure of an orthogonal independent cluster solution with the simple structure of its oblique analog.

Multivariate Analysis of Repeated Measures with a Design on the Measures and on the Subjects—An Example

L. D. McLEAN,
Ontario Institute for Studies in Education and
ANNE KEETON, Queen's University

An exact multivariate analysis for troublesome repeated measures designs has been described by Bock and programmed by Finn. The method is applied to digit span data from an actual experiment involving first-grade pupils in an inner-city school and a suburban school in Canada. The repeated measures are first transformed by an orthogonal matrix derived from the design on the measures; the resulting new variables are treated as dependent variables in the multivariate analysis of variance employing the design on the subjects. In this example, Bock's method yelded more significant results compared to conventional approximate analyses. Covariates may be used.

A Technique for Determining Reliable Clusters of Variables in Discriminant Analysis

JAMES P. STEVENS, University of Cincinnati and
ROBERT S. BARCIKOWSKI, Ohio University

A test statistic useful for identifying clusters of variables in discriminant analysis which can be reliably differentiated in terms of variable potency is described. The procedure for identifying the clusters was tested on several data sets, and was illustrated on National Merit file data. In the latter data file, three clusters of variables, significantly different in terms of variable potency, were found. The practical importance of the procedure presented is that it guards against the conclusion that a given pair of variables are differentially potent unless the variables lie in different clusters.

An Empirical Comparison of Two Path Coefficient Estimates

PETER T. K. TAM, GERALD J. SCHLUCK and
F. J. KING, Florida State University

Since the development of causal path analysis by Wright, both the standardized and unstandardized procedures in path coefficient estimates have been advocated in the related literature, but the superiority of one technique over the other has not been demonstrated empirically or mathematically. In this study, the sampling properties of both coefficient estimates in a chain prediction model are compared under known conditions by Monte Carlo methods at systematically selected parameter points which include sample size and $Var(E_1, E_2)$. The implications, interpretation, and problems of both methods are discussed with reference to the evaluation of learning hierarchies.

25.19 THE STUDENT-INSTITUTION INTERFACE (A)

Black-White Student Interactions in an Urban Secondary School

PHILIP A. CUSICK, Michigan State University

This project was designed to explore the interracial interactions among students in a large, urban, secondary school. Using the methodology of participation-observation and interview, the researchers developed a tentative explanation of how the students behave toward each other and explained how that behavior affects other facets of the organization. The study concluded that informal interracial interactions were virtually non-existent, that formal interactions occurred only in highly structured classroom situations, that attempts at integration were discouraged by other forces operating within the school, and that attempts to reduce potential race conflict consumed an enormous amount of organizational energy.

Demographic and Social Accounting: A Follow-up on the Withdrawals from Quebec Colleges and Universities

AVIGDOR FARINE, University of Montreal

In order to study the reasons for not attending school, questionnaires were sent to Quebec college and university students who failed to register in September 1971. The reasons for quitting school do not differ significantly between the studied groups. The college study dealt with graduates as well as drop-outs. The findings about the present situation of graduates and the degree of their satisfaction in comparison with those of drop-outs are very instructive. This study is in the limits of demographic and social accounting, whose aim is to provide more information for institutions and students alike, and to record the feedback of college or university training.

Management Styles and Leadership Behavior Within a Residence Life Program

JAMES Y. K. MOY, Wartburg College
LOYDE W. HALES, Ohio University

The purpose of this study was to investigate the leadership behavior of Residence Life staff members, the management styles of the organization, and their relationship to each other. Staff members and students within the Residence Life Program at Ohio University comprised the sample used. Staff perceptions on the POC were significantly different for each mode of responding. When the staff was classified into four leadership behavior quadrants by the LBDQ, their perceptions of the organization "as it is" did not differ significantly across quadrants, but perceptions of personal behavior and of what the organization "should be" differed across quadrants.

26.01 DO TEACHERS MAKE A DIFFERENCE? WHAT DOES THE RESEARCH SAY? (C, SYMPOSIUM)

MEREDITH D. GALL,
Far West Laboratory for Educational
Research and Development, Organizer

The review and criticism of research on teacher effectiveness is addressed to the question, "Do teachers make a difference?" All concerned, the reviewer as well as the original researchers, seek knowledge about the relationships between teaching behavior and educational outcomes. Naturally, there are disagreements about our present state of knowledge. One of the most successful and hardworking reviewers in this field is Barak Rosenshine who has probably produced more reviews than any other individual. This symposium will use his work as the basis for considering alternative approaches to critiquing research on teacher performance/student outcomes. The speakers will seek to identify areas of agreement and disagreement about which teacher variables are associated with educational outcomes, the extent to which one study replicates another, and some of the pitfalls of research and the reviewing of research on this topic.

Ned A. Flanders, Far West Laboratory for Educational Research and Development, will present a paper entitled "Knowledge about Teaching Effectiveness." The presentation will develop the following points: (1) Research on teacher effectiveness and the reviewing of this research can be criticized in terms of purpose. The first task is to state purposes in conducting this type of research and purposes in reviewing it. (2) Different kinds of research lead to different kinds of knowledge. Correlational studies of teacher effectiveness have inadequacies with respect to the kind of knowledge they produce. (3) Areas of agreement and disagreement with Rosenshine's reviews exist. Locating the original research reviewed and analyzing the procedures used to quantify variables is important. The hypothesis guiding this work is that combining the original research into different groupings will lead to conclusions that are different from those Rosenshine identified.

"Methodological Problems in Teacher Performance Research," by Robert Heath, Nomos Institute, will make the argument that past research contains too many methodological flaws to be used to answer the question, "Do teachers make a difference?" This research is best reviewed for the light it sheds on methodological problems that arise in conducting teacher performance/student outcome studies. Five problems are particularly troublesome: (1) It is difficult, at times impossible, to compare results across studies on a given teaching variable because operational measurement of the variable differs so much from one study to the next. (2) Posttreatment student achievement scores are usually adjusted on a number of dependent variables, such as intelligence or aptitude. Is this a legitimate practice? (3) There appear to be many problems in obtaining valid, reliable measures of teaching behaviors that are to be related to student outcomes. (4) Past research was usually based on a correlational design which creates difficult problems for data interpretation.

"What Are Legitimate Student Outcomes?" will be presented by Meredith D. Gall, Far West Laboratory for Educational Research and Development. In reviewing teacher performance research, Barak Rosenshine only included studies in which student achievement was measured by end-of-training paper-and-pencil tests. However, the purpose of this presentation is to argue that the question, "Do teachers make a difference?" must be answered by taking a broader view of student achievement. Given a broader definition, it is possible to cite a number of studies demonstrating teacher effects on student outcomes, such as amount of participation in discussions, length and quality of response to questions, and interrupting the teacher during independent study. It is also important to check that the student outcome measures are appropriate for the teaching behaviors being assessed. In one study reviewed by Rosenshine, teacher use of higher-cognitive questions was inappropriately evaluated by studying its effect on a student posttest measuring simple recall and comprehension. The best strategy at present for studying teacher performance is to investigate proximal, direct effects (e.g., teacher talks less, students talk more) rather than distal effects, particularly performance on end-of-course tests.

26.02 CONSTRAINTS AND PRESSURES ON DEVELOPMENTAL CURRICULUM INNOVATION (B, SYMPOSIUM)

HULDA GROBMAN, Brooklyn College, CUNY, Organizer

In recent years, the developmental curriculum process, the production of new curricula by groups rather than by individual authors, using experimental tryouts of preliminary materials and collecting feedback from such tryouts to be used for the improvement of curriculum prior to its release, has been widely used in attempts to effect curriculum innovation. The well-known national curriculum projects—SMSG, PSSC, CHEM Study, and BSCS—have been followed by hundreds of other projects in the United States and abroad, sponsored by such various auspices as state and local governments, national scholarly groups, and groups within a university.

While much attention has focused on the products produced by such groups, only recently has there been a concern with the environment within which the project operates. Many of the criticisms directed at the products reflect the constraints and pressures under which the project operated. Though a number of recent studies have examined the political pressures in state and local curriculum efforts, concern has been largely with a single project or single locality, and little attention has been given pressures operating on other types of projects or other types of pressures operating on these kinds of projects.

Enough experience is now available to permit a broad comparative view, considering a wide variety of constraints and pressures and the different degrees and nature of these, as they are reflected at different levels and in different countries. A better understanding of the nature and degree of constraints and pressures on innovation, as they are exemplified in the developmental curriculum project, may lead to a better understanding of the innovative process and to more effective reactions to and manipulation of such constraints. It may also lead to better prediction of the possibility of success of innovative efforts, given the environment in which they are situated. In fact, it may be that success of some projects is not highly feasible, given the situational constraints of the parent system and/or target system.

One might consider the constraints and pressures as a series of vectors acting on the target project, with a commonality among many of the vectors, but with the direction and intensity of the vectors varying. Illustrative of one such cluster of vectors is funding, with source of funds, timing of fund allocating, magnitude of funding, and strings attached to funds, as variables having major impact on all projects. Organizational history, norms and traditional tangible and intangible reward practices of the system of which the project is a part, is another. Nature of the target system, including teachers, parents, taxpayers (or foundation), students, school and school system, and political system, is a third. In all, there are some dozen such areas in which rather basic constraints and pressures may be identified. The identification of the possible vectors, their manifestation in a variety of circumstances and the implications of this for innovation theory will provide the substance of the presentations.

Ellen Corcoran, University of New Hampshire, has been concerned with curriculum innovation in New York City at the school level (in conventional and alternative-school situations) and at the school-system level, and also overseas (in Ghana) at the school level. In the context of the school and school system, her foci are: (1) the relevance of the literature on innovation *vis-à-vis* curriculum development, and (2) the extent to which constraints in a local system delimit the parameters of innovation in that system.

Myriam Krasilchik, Centro de Treinamento para Professôres de Ciências, University of São Paulo, is director of a major science

curriculum project in Brazil and has been a consultant to other science curriculum projects in South and Central America. She is concerned with the kinds of constraints and pressures experienced in countries less highly developed than the United States and having nondemocratic governments. While there are some unique aspects in such situations, many of the apparent differences represent only variations in nature and degree of the same problems faced in projects within the United States.

Hulda Grobman, Brooklyn College, CUNY will: (1) identify various kinds of constraints and pressures, (2) note commonalities among projects and provide an across-project, across-country view, identifying common and uncommon threads and (3) suggest alternative strategies for optimizing curriculum development in the face of these constraints.

26.05 STRATEGIES FOR CURRICULAR PLANNING: TOWARD DEFINITION IN THE CURRICULUM FIELD (B, SYMPOSIUM)

BRUCE R. JOYCE and GARY GRIFFIN,
Teachers College, Columbia University, Organizers

The problem of creating definition in the field of curriculum has been confounded because curriculum theorists have operated from different frames of reference without constructing linguistic bridges for holding alternative conceptions of design and philosophic foundation. This question has not been resolved: Is the curriculum field evolving toward a set of differing design processes, each generated from a unique frame of reference, or is a unified, pluralistic field evolving?

This symposium will systematically compare several frames of reference for building curricula, explore the philosophic differences and similarities, and examine the problem of developing bridge languages to frame the development of curricula and procedures for designing them.

The primary objectives are to describe, compare, and contrast several frames of reference for curriculum development and to examine the problem of creating a language structure which will hold a pluralism of approaches to curricular thinking. Personalistic, social, subject-centered, mental process-centered and cybernetic models of curriculum development will provide the substantive base for the symposium.

The five presentations will each deal with one focus or frame of reference for curriculum development. Each speaker will describe the essence of the model type and its variations. Each will use a series of concepts designed to facilitate comparison of the approaches. The nature of objectives, approaches to the selection and organization of learning activities, the generation of assessment procedures, and the philosophic or psychological foundation of the approach will be described.

Carl Weinberg, University of California, Los Angeles, will discuss "The Paradox of Planning Curriculums for Real People." His paper is concerned with the humanistic approach. Millie Almy, University of California, Berkeley, will speak on "Teaching People to Think," the approach centered on cognitive development. "Curriculum and the Systems of the Disciplines" is the subject of Marion Price, University of Georgia. His is the discipline-centered approach. Bruce R. Joyce and Marsha Weil, Teachers College, Columbia University, will speak on "Programmed and Cybernetic Models," approaches centered around instructional systems. The last paper, "An Orientation to Different Positions," will be given by James B. MacDonald, University of North Carolina, Greensboro, and will be concerned with curriculum and human interests.

The discussion will revolve around these questions: (1) Do the approaches employ significantly different processes? (2) Do they express objectives, means and assessment differently? (3) Do they require separate languages or can a common language be developed which unites them conceptually while permitting the use of their separate strengths? (4) Is a pluralistic technology of curriculum development possible, or should the field consist of a series of separate approaches?

There is a need to establish a common working language for the curriculum field—a language which permits the symbolic control of the technical alternatives for curriculum development or which recognizes a set of differing curriculum design processes and philosophies.

26.06 INDIVIDUALIZATION IN INSTRUCTION (C)

The Effects of Instructional Methods on Learning

LAWRENCE McNALLY, BOCES, Nassau County, New York

One hundred and eighty children were employed in a 3 (method) x 2 (tempo) x 2 (grade) x 2 (list) factorial design to investigate the matching of learners' conceptual tempo with methods of presenting a free recall learning task. Although presenting equivalent information, the methods (Part, Rehearsal, Standard), which are based on Compensatory and Preferential Models, were structured so as to match the conceptual tempo characteristics of learners. Data analysis employed a multiple linear regression model with intelligence and sex included as predictor variables. Analysis revealed significant differences between methods as well as grades; however, no interaction effects were present. Conceptual tempo was found to be orthogonal to intelligence.

An Analysis of Aptitude as a Predictor of Achievement in an Individualized Mode of Instruction

DONALD CAMPLESE, Bucknell University, MAURICE KALIN, West Virginia University, and ROGERS McAVOY, West Virginia University

This study questions the traditional relationship between aptitude and achievement in an individualized mode of instruction. Measures were taken on time in instruction, gain scores from pre- to post-tests, and score on the American College Test Battery on 120 *Ss* in an open learning center. An individualized mode of instruction was used with printed and mediated materials. An analysis of these data indicated that *time* was a more significant prediction of gain than aptitude. As *Ss* spent more time in this program, their gain scores increased. These results conflict with the literature on aptitude and achievement.

An Analysis of Personality Variables in Individual Modes of Instruction

ROGERS McAVOY, West Virginia University,
MAURICE KALIN, West Virginia University

This study is based on the mastery learning model that assumes that an aptitude for learning a task is the amount of time *Ss* need to reach criterion. In a self-instructional mode, personality factors were found to be more significant and account for more variation than did scholastic aptitude. Significant differences in time were found between high and low *Ss* on the 16PF. Ss differed on four basic personality characteristics.

The Effect of Individual Goal-Setting Conferences on Achievement, Attitude, and Locus of Control

JOHN P. GAA, University of North Carolina

The study investigated the effect of weekly goal setting conferences on the achievement, attitude and locus of control orientation of high school students. Subjects were blocked on sex and previous achievement and assigned to one of three treatment groups: the goal setting group which received weekly individual goal setting conferences; the conference group which received weekly individual conferences, but set no goals; and the control group which received no conferences, but

received the same in-class instruction. Analyses of the data showed that the goal setting group had significantly higher achievement, significantly more positive attitudes towards class, and a significantly more internal locus of control.

26.07 ACHIEVING SITUATIONAL TEACHING OF THEORETIC KNOWLEDGE: PROBLEMS AND PROSPECTS (B)

What Types of Field Based Learning Experiences do Pre-service Teachers Select?

HENRY P. COLE, University of Kentucky

Relevant early field experiences are widely proposed for pre-service teachers as the means for application of theories learned in education courses. This study provides information about the range and variety of career related field experiences engaged in by pre-service teachers in a wide range of regional institutions and schools as part of their early course work in educational psychology, sociology and philosophy. The utility of various types of early field experiences and the student's preference for these are related to measured attitudes and traits such as degree of personal dogmatism, conceptualization of the nature of knowledge, academic achievement and degree of child centeredness.

What Valid Differences in Appropriate and Preferred Field Experiences for Pre-Service Teachers Can Be Inferred?

DANIEL S. ARNOLD, University of Kentucky

This paper reviews the research relating to teacher personality, needs structures and values, and from that review draws inferences relative to the types of profession-related, field-based experiences various pre-service teachers might be expected to prefer, profit from maximally, and need at a given point in their professional and personal growth. The intent of the paper is to provide insight into the optimal assignment and election of various kinds of teacher preparation students to field-based experience so that maximum applicative and interpretive use of theoretic knowledge occurs.

Personality, Value Structure, and Preference for Field Activities Among Pre-Service Teachers

DAVID L. LARIMORE and EDGAR L. SAGAN,
University of Kentucky

Dimensions of personality and value structure were related to preferences for field activities among pre-service teachers. These dimensions included authoritarianism, traditionalism of educational views, progressivism of educational views, child centeredness, institutional centeredness, situational knowledge or practical wisdom in teaching, and beliefs about the nature of knowledge, learning, the learner, and the function of the school. The teaching-related activities were those encountered in self-selected field experiences of students in an experience-based experimental teacher education program. The data indicate that students with more progressive attitudes tend to exhibit a wider range of involvement, spend more time, and perform better on situational knowledge tests.

Alternative Strategies for Pre-Service Education Programs

RICHARD T. LaBRECQUE, University of Kentucky

This paper conceptualizes a pre-service teacher education program that provides for and justifies a wide range of field experiences in which the needs of pre-service teachers and the human development needs that exist in the surrounding community are simultaneously met. It is shown why the community rather than the schools per se should become the contexualistic framework for designing teacher education programs. Reference is made to appropriate methodological approaches for understanding and intervening into cultural systems, as well as to related value-conflict and value-analysis factors in social system intervention.

How Can Pre-Service Education Programs Involving Career Related Field Experiences Be Evaluated?

WILLIAM J. BRAMBLE, University of Kentucky

Methodological procedures are posed for the evaluation of introductory education courses incorporating ancillary field experiences. One key question has to do with how the relevance of various types and varieties of field experiences can be evaluated from the standpoint of: (1) their contribution to the professional development of the pre-service teacher, and (2) their contribution of needed services and activities performed by pre-service teachers within sponsoring field based agencies. Evaluation will be viewed as a decision making process dependent upon multiple sources of information from within and outside the system under study. Formative and summative forms of evaluation will be discussed.

26.08 EVALUATION BY OBSERVATION TECHNIQUES (C)

The Differentiated Child Behavior Observational System

SYLVIA ROSS and HERBERT ZIMILIES,
Bank Street College of Education

The Differentiated Child Behavior (DCB) Observational System has a two-fold purpose: first, it provides a description and analysis of patterns of classroom interactions in educational programs and program impact on children's functioning; and second, it provides feedback to supervisory staff so that analysis of programs contributes to implementation of the in-service teacher training program. Findings in initial studies indicate the instruments are sensitive and appropriate to open as well as traditional classrooms. Data has revealed significant differences among groups in predicted directions, and findings seem to pinpoint factors contributing to these differences.

Use of Observational Data for Formative Evaluation of an Instructional Model

MARGARET C. WANG, University of Pittsburgh

This paper describes a study investigating the characteristics of teacher behavior under two different instructional management models and their differential effects on students under an individualized early learning program. The study investigated the effectiveness and feasibility of using observational techniques in classroom settings to obtain information about student learning processes and outcomes necessary for implementing an adaptive early education model. Observational data, records of student progress in the curricula, and records of student learning activities were collected systematically in order to characterize the classroom behaviors of studnets and teachers.

Observation as a Tool for Evaluation of Implementation

GAEA LEINHARDT, University of Pittsburgh

This paper reports results of an evaluation instrument and a training program for its use. Emphasis is on the utility of the instrument in developing classroom descriptions which provide feedback for teacher trainers and curriculum developers. The study sought to identify teacher behaviors which are easily identified by nonspecialist observers, and which are significant in terms of an individualized instructional

model. Observations were made in 30 classrooms in five different geographical regions. Discussion of the observation instrument is centered around the following: (1) feedback about areas of concern for teachers to staff responsible for teacher training (2) evaluation information on implementation of the instructional models (3) providing empirical data for comparing differences between classrooms.

A Developmental Study of Group Formation in Children

MURRAY S. EDELMAN and DONALD OMARK,
University of Chicago

This study of children's group formation employs Piaget's cognitive-developmental theory along with ethological concepts and methods used in the naturalistic study of the social behavior of animals. It represents the first application of ethological ideas to a study of the child's conception of his social world, and focuses on his conceptions of the dominance relations within the class, and the effect his perceptions of others have on his behavior when interacting with classmates. Subjects were 500 public school children, aged three to nine. Preliminary results seem to indicate the usefulness of integrating Piaget's work in development with ethological ideas of adaptation.

Student Learning Activities under an Individualized Instructional Model

JOSEPH SHIMRON, University of Pittsburgh

This study investigated the effectiveness of an observational technique developed to study characteristics of the Individually Prescribed Instruction Program (IPI), and the extent to which IPI adapts to individual student differences. Subjects for the study were students from a second grade IPI classroom of an inner-city public elementary school. The results of the study have been analyzed in terms of the following four basic topics: (1) the distribution of student time spent in different types of activities, (2) the sequential effects of the different activities, (3) frequency and duration of activities, and (4) qualitative aspects of the activities.

26.09 STUDENT MOTIVES, ATTITUDES AND ACHIEVEMENT (C)

The Effect of Social and Cognitive Interaction Strategies on Children's Motivation to Achieve in School

ROBERT G. KOEP, University of Oregon

The purpose of this study was to determine whether achievement motivation can be taught by either of two approaches common to the kindergarten. After being pre-tested for motivational levels, subjects were randomly placed in three groups: (1) *cognitive*—direct teaching of components designed to enhance motivation, (2) *Social*—social interaction within self-selected activities, (3) *Control*—continuation of regular activities. These represenatative groups consisted of 82 kindergarten children. Significant growth in motivational level occurred in both cognitive and social groups as compared with the control group (.05 level). Incorporation of motivational sequences into kindergarten curricula appears advisable.

The Relationship of Achievement and Attitudes Towards Mathematics in the Elementary School: A Longitudinal Study

IAN BEATTIE, JOHN DEICHMANN, and
ERNEST LEWIS, Southern Illinois University

The purpose of this study was to investigate changes in attitude towards mathematics over time and their relationship to selected other variables (IQ, mathematics achievement, reading achievement, and sex). Scores were obtained by an adaptation of the S.M.S.G. attitude scale and through regularly scheduled standardized tests on the entire population (n = 150) of one grade in a small school system. Scores were obtained each year for three consecutive years. All data has been collected, and preliminary analysis of the first two years data indicates that the variables investigated are helpful in predicting attitudes to a greater extent than has been found generally.

Factors Affecting Student Acceptance or Rejection of a Foreign-Language Learning Program

CLARE BURSTALL, National Foundation for Educational Research, England.

A longitudinal study of determinants of student acceptance or rejection of a foreign-language learning program has been undertaken within the framework of a ten-year program of research into the teaching of French at elementary level. Analysis of classroom observation, interview and questionnaire data, indicates that factors determining student acceptance or rejection include: student's sex, socio-economic status, employment expectations, attitude towards and contact with foreign peoples, parents' and teachers' attitudes and expectations, student's perception of the "good" teacher's characteristics, maturational factors, characteristics of the instructional materials and their mode of presentation, and structural aspects of the learning situation.

The Interaction of Divergence and Convergence of Students and Teachers with Personality and Instructional Variables Affecting Educational Outcomes

DAVID ZUSSMAN and CHARLES E. PASCAL,
McGill University

The purpose of this study was to explore the relationship between convergent-divergent abilities of students and a number of relevant classroom variables. A sample of 525 tenth- and 11th grade high school students was tested for convergent and divergent abilities. In addition, measurements of classroom climate and levels of scholastic achievement for each student in each of his subject areas were obtained. Teachers administered the convergent-divergent tests and made behavioral judgments of each of their students along a number of dimensions. Results suggest that teachers tend to rate divergent students differently than convergent students as a function of their own cognitive style.

Relationships Between Anxiety and Curiosity Processes in Complex Learning Situations: A Replication Study

DARLENE L. HEINRICH and DUNCAN N. HANSEN,
Florida State University

An Optimal Degree of Arousal Model was used to investigate the relationships between anxiety and curiosity and their impact on learning materials differing in level of intrinsic interest. Results supported predictions that: 1) inverse relationships existed between states of anxiety and curiosity, 2) curiosity and anxiety levels fluctuate over time, and 3) curiosity and anxiety levels vary as a function of the material being learned. Students high in state anxiety while learning had lower levels of performance on module and posttests.

26.10 COMPUTER APPLICATIONS IN INSTRUCTION (C)

Design of an Educational Environment with a Computer-Controlled Organ

DAVID ASHTON, University of Utah

A developmental project was undertaken in 1971 to design a responsive environment for music education allowing free exploration,

feedback, and free manipulation. The environment consisted of a computer-controlled, electronic concert organ, a graphics scope, and a computer terminal. The computer allowed many operations such as transposition, synthesis, and music editing. The graphics scope gave visual feedback of analyzed music displayed in graphical form. Observations were made of 13 subjects arranged in various groups aged four to 12 years. Results of the project were discussed in terms of the environmental learning model and its implications for music education.

The Design of Student-Controlled CAI Courses

RALPH E. GRUBB, IBM and Columbia University,
BRUCE L. HICKS, University of Illinois, and
PAULA L. KATZ, Hofstra University

This session reviewed and summarized for the instructional designer those critical concerns relating to the issue of control in computer-assisted instructional (CAI) programs. Three design languages were proposed to describe the requisite variety of control patterns, the structure of the course, and the changes necessary to modify the course and/or the creation of new programs. A unique interactive approach was also proposed for the rationalization and analysis of course flow decisions. Trends and benefits found in the application of these techniques to the design of CAI courses were also summarized.

The Concept of Institutional Memories for Courses

ERNST Z. ROTHKOPF, Bell Telephone Laboratories,
Inc. Murray Hill, New Jersey

An institutional memory for courses is a school record-keeping system with scientific and applied uses. The system continuously organizes and accumulates information about (1) student characteristics, (2) instructional transactions, (3) student performance, and (4) post-training consumption of course-related skills. The records are stored in the school's computer in a form that allows convenient interrogation of the memory. The memory is designed to foster the development of instructional science and to aid in educational experimentation. It is also useful in (1) maintenance and improvement of course quality, (2) empirical determination of the usefulness of course objectives, and (3) as a social tool for changing schooling procedures.

The Course Maintenance System: An Example of a Computer-Based Course Memory

MARTIN E. SMITH, Bell Laboratories

A computer-based system of course documentation has been developed for a technical school in an industrial setting. Called a course maintenance system, it continuously collects, stores, retrieves and summarizes data about student characteristics, instructional content, student achievement, instructional objectives and transfer of training. Data are presented on request to instructors and administrators in standardized printouts. These printouts are characterized by detailed labeling, frequent use of interpretive notes, and "starring" points of special interest. The CMS has been used to introduce instructional innovations, assess instructional quality, and investigate relevance of course objectives to job demands.

26.13 PURDUE PROBLEM SOLVING TEST (D)

Development of a Problem Solving Inventory Involving Three-dimensional Models of Problem Situations

SUSAN RINGENBACH, JOHN C. HOUTZ, BARBARA LEWIS, and JOHN F. FELDHUSEN, Purdue University

A new form of the Purdue Elementary Problem Solving Inventory which presents real-life problem situations as three-dimensional models is described and developmental data is presented. Second and fourth graders in an advantaged and a disadvantaged school were given either the model version or the original slide version of the Inventory. The model version was found to be an internally consistent, equivalent form of the original Inventory. The KR-20 for the combined sample was .64 for both the model and the slide versions. Also, a coefficient of equivalence for students taking both forms of the Inventory was .73.

Abilities Measured by the Purdue Elementary Problem Solving Inventory

STUART M. SPEEDIE, JOHN C. HOUTZ, SUSAN RINGENBACH and JOHN F. FELDHUSEN, Purdue University

The purposes of the present investigation was to factor analyze the results of the administration of the Purdue Elementary Problem Solving Inventory to 361 second-graders. The Inventory was designed to assess twelve distinct skills involved in human problem solving. Tetrachoric intercorrelations were generated from the item scores and a principal axis factor solution with varimax and then oblique rotations was computed. Six psychologically interpretable factors emerged, accounting for approximately 32 percent of the total variance. These six factors corresponded to six of the hypothesized twelve skills involved in the test. Items representative of these factors appeared to assess the ability to sense that a problem exists, define the problem specifically, notice details, see implications, make remote associations, and select the best solution to a problem.

Problem Solving Ability of Disadvantaged Children Under Four Test Modes

JOHN C. HOUTZ, SUSAN RINGENBACH, BARBARA LEWIS, and JOHN F. FELDHUSEN, Purdue University

Four forms of a problem solving inventory were administered to 410 second-and fourth-graders from different ethnic and socio-economic backgrounds. Each form presented the same real-life problem situations, but made use of different modes of item representation. One form made use of 3-D models of the problem situations; one form used slides of drawings of the situations; a third form used only the drawings printed in an answer booklet; and the fourth form used only all-verbal descriptions of the situations. The hypothesis tested was that *Ss* from lower SES backgrounds would perform best on the model form because of a greater reliance on enactive or "concrete" modes of thought. Significant SES differences were obtained on all but the slide form. These results tend to support research that audio-visual aids of "intermediate" stimulus loads produce most effective learning.

An Abstract Test of Problem-Solving Ability

BARBARA LEWIS, JOHN HOUTZ, SUSAN RINGENBACH, and JOHN FELDHUSEN, Purdue University

This paper describes and evaluates a new abstract form of the Purdue Elementary Problem-Solving Inventory. The new test parallels a shortened form of the original Inventory, but presents problems verbally, rather than through slides. Both forms were given to advantaged and disadvantaged second- and fourth graders. For the total sample, the slide version has a KR-20 of .64 and the abstract version, .72. Test-retest reliabilities of .69 and .70 were obtained for advantaged students on the slide and on the abstract form, respectively. The new test seems promising from the standpoint of reliability combined with ease of administration.

26.14 SELECTED PAPERS II (D)

Student Membership Relations in the Classroom Group

MARTIN FELSEN and ARTHUR BLUMBERG,
Syracuse University

The development of an instrument to measure the type and strength of the relationship which a student has with his peers in the classroom group situation is described. Jay Jackson (1959) developed the conceptual framework for the scale, and treated various types of group membership other than formal membership. Within the conceptual framework, two dimensions, Attraction and Acceptance, are employed within a Lewinian phase space. The resultant scale (PGRS) of 17 items was validated through several studies. A study was conducted to establish the reliability of the instrument.

The Use of Multiple Matrix Sampling and the Pearson Type I Curve to Approximate Norms Distributions of Standardized Achievement Tests

DALE C. BRANDENBERG, University of Illinois and
ROBERT A. FORSYTH, University of Iowa

Multiple matrix sampling (MMS) procedures were utilized to determine the necessary parameters of a Pearson Type I curve. Empirical norms distributions were approximated by both the Type I model and the negative hypergeometric model. Four existing ITED norms distributions, two subtests and two grades, were approximated by the MMS procedures. Two sampling designs for each test-grade combination were studied. Comparison of approximations obtained for the Type I curve and the negative hypergeometric curve supported the use of the Type I curve for determining test score distributions of large populations.

Research in Retrospect: Implications for the Future

JAMES W. TRENT, JAMES W. KEESLING,
ALFRED C. MARCUS and CLARE ROSE,
University of California, Los Angeles

The Analytical Review Project, conducted by UCLA's Center for the Study of Evaluation under the auspices of the U.S. Office of Education, evaluated 20 major longitudinal studies of the impact of schools and colleges on students' cognitive, personal, and vocational development. This project included a critical appraisal of the methodology used in each study as well as the studies' findings. The convergence and divergence of findings are reported together with underlying methodological problems and recommended methodological procedures for survey research particularly as they pertain to enhanced understanding of the relationship between student development and the educational process.

Educational Research and the Quality of Health Care: A Symbiotic Relationship

JACK E. THOMSON, The Medical College of Wisconsin

Indices for quality of health care were developed for management of selected patient problems in a hospital setting. Analysis of physician staff members' patterns of patient management with respect to these indices led to individualized educational effort for each physician staff member. One year later, physicians' patterns of patient management had changed, and values of the indices for the hospital showed quantifiable improvement in the quality and efficiency of care. An educational researcher collaborated with a physician to interpret data and formulate researchable questions. The collaboration suggests an important role for an educational researcher in the development and implementation of criteria for quality of health care.

Research Design in the Arts: Suggested Approaches and an Illustration

ELIZABETH A. NICOL, Stanford University

A research design whose procedures are drawn from aesthetic theories may provide an appropriate and rewarding approach for studies in art and literary education. As an illustration, a study based on a theory of literary criticism is presented. It is a description of student response to narrative techniques in fiction of high quality. It accepted the view that the ultimate in literary response is apprehension of the organic form of a work, and that sensitivity to authors' techniques is a necessary prerequisite. Objective instruments successfully obtained descriptive data on student response which were analyzed and evaluated using published critiques.

26.15 NON-PUBLIC SCHOOLS: CONTRIBUTIONS TO THEORIES OF EDUCATIONAL ORGANIZATION (A)

Searching for Models of Community Influence in Schools: An Examination of Public and Private Schools

DAVID O. PORTER, Department of Health, Education and Welfare and the University of California, Riverside and
TEDDIE WOOD, University of California, Riverside

The authors, sensing a grave lack of confidence in many large public school systems, have chosen in this paper to concentrate on community influence on schools. They (1) explored the differences in the consumer-supplier relationship in the public and private sectors, (2) argued that new models for involving the public in the decisions and operations of the professionals must be found in order to provide the kind of educational services that will more nearly satisfy the public, and (3) presented models of community influence obtained from looking at private religious schools, private secular schools, and public schools, where a close connection exists between payment (consumers) and service (suppliers) resulting in a greater choice in the types of schools parents want as opposed to the forcing of a single school system upon the community.

Financial Condition of Non-Public Schools: Implications for Public Policy

OTTO F. KRAUSHAAR, Harvard University

This paper updates and develops further data and analyses presented in *American Non-Public Schools*. It presents a broad picture of the diversity in private schools, characterizes the chief differences between private and public schools, and summarizes the role of the private school in the American educational system. The most recent financial information on non-public schools, and the consequences for these schools and for American public life should they not be aided are described. In comparison to the pluralistic, state-supported school systems of other countries, the paper predicts some of the impacts of state support to private education. Data were collected by nationwide questionnaire and extensive interviewing of the spectrum of participants--parents, teachers, and students--in the private schools.

The Politics of Alternative Models to the Public School System

JULIA VITULLO-MARTIN, University of Chicago and
THOMAS W. VITULLO-MARTIN, Univ. of Calif., Riverside

Despite the recent resurgence of academic interest in non-public schools, we continue to be relatively ignorant of the political and social composition of these schools. Our recent study of the Chicago and Los Angeles Catholic school systems sought to redress this ignorance. The

study was divided into three sections. The first section gathered and analyzed school data from central (diocesan) sources, thus providing a statistical description of the subsystem as a whole. The second section described and analyzed the internal political structure of each subsystem. The third section surveyed and analyzed parental motivation with the following question at the basis of the survey: why do parents initially send and ultimately maintain their children in nonpublic schools?

Organizational Survival: A Comparative Case Study of Seven American 'Free Schools'

BRUCE S. COOPER, University of Pennsylvania

This paper contributes to theories of organizational survival by comparing the "clinical case histories" of seven representative free schools. Of these, four have failed and three continue. Though they present an ideology which is anti-organizational in their attempts to humanize education and pass on libertarian values, free schools nonetheless confront the problems which any organization encounters: chiefly, they face the problem of survival. The study shows that survival depends upon (1) accommodating to social and political demands by society, (2) building on organizational structure bureaucratizing, (3) recruiting and supporting staff, (4) agreeing on goals, and (5) adapting to changing external and internal situations.

26.16 RELIABILITY INVESTIGATIONS (D)

An Assessment of the Kuder-Richardson Formula (20) Reliability Estimate for Moderately Speeded Tests

FRANCES SWINEFORD, Educational Testing Service

Results obtained by the Kuder-Richardson formula (20) adapted for use with R-KW scoring are compared with three other reliability formulas. Based on parallel tests administered at the same sitting the KR (20) estimates are compared with alternate-form correlations and with odd-even correlations adjusted by the Spearman-Brown prophecy formula. Comparisons are also made between KR (20) estimates and alternate-form correlations obtained for tests administered after intervals of six to ten months. All the results justify the use of the Kuder-Richardson procedure with tests that show no more than moderate speededness.

Confidence Interval Estimation of KR_{20} — Some Monte Carlo Results

GARRETT K. MANDEVILLE, University of South Carolina

The suggestion is made that no matter what information is available on the reliability of measurements used in an experiment, that it be supported by internal consistency reliability estimates derived from the data itself. Furthermore, assuming a manipulated independent variable, these estimates should be obtained for each experimental group and since sample sizes will often be modest, confidence intervals should be provided in addition to point estimates. In this study the properties of the usual ANOVA based estimation procedure were investigated for tests which varied in length, item difficulty distribution and item interdependency. The sample size was taken to be 30. The results indicate that in many practical situations, the ANOVA procedures provide adequate estimation of the true KR-20.

Four Indices for Investigating Inter-Observer Accuracy of Observational Instruments

WILLIAM W. SWAN, Rutland Center

Four indices for investigating inter-observer accuracy in observational instruments (contingency coefficient, Scott's *pi*, Bernstein's coefficient, and percent agreement) are reviewed concerning their assumptions, formulation, and tables indicating numerical functioning. Three of the four indices (excluding the contingency coefficient) are compared by computing each for four sets of observational data. It was found that Bernstein's coefficient had the highest median and the smallest range, percent agreement the second highest median and the second smallest range, and Scott's *pi* the lowest median and the largest range. It is hoped that authors will employ this information in their practical application and interpretation of these indices.

The Effect of Selected Poor Item-Writing Practices on Test Difficulty, Reliability and Validity: A Replication

CYNTHIA BOARD and DOUGLAS R. WHITNEY, University of Iowa

Violations of four selected principles of writing multiple choice items were introduced into an undergraduate religion course mid-term examination. Interaction effects between the poor practices and course achievement occurred for 1 of the 4 practices. Two other flaws evidenced main effects (made the tests more difficult). KR_{20} values were lower for the tests containing the flawed items than for the "good" versions of the items in all four comparisons. Concurrent validity (correlation of experimental test scores with the corresponding midterm of identical content) was lower in all four cases.

26.17 MEASUREMENT: VALIDATION OF TESTS (D)

Convergent Validity of the IPAT Children's Personality Questionnaire and Teachers' Ratings of the Adjustment of Elementary School Children

ELISE E. LESSING, MARK I. OBERLANDER, and LINDA BARBERA, Institute for Juvenile Research

The IPAT Children's Personality Questionnarie was administered to two samples of white, middle class, suburban school children. Both samples were divided into well adjusted and maladjusted subgroups on the basis of teacher ratings. The CPQ Neuroticism score correctly classified 68% and 78% of the pupils, while Lorge-Thorndike IQ score correctly classified 73% and 68% in the two samples. Teacher ratings of pupils' maladjustment was found to correlate more highly with the pupils' IQ scores than with their scores on CPQ Neuroticism. Implications concerning the construct validity of teacher ratings of adjustment and the validity of the CPQ are discussed.

Equivalent Validity of a Completely Computerized MMPI

HAROLD F. O'NEIL, JR., The University of Texas at Austin, ROBERT E. LUSHENE, Veterans Administration Hospital, Minneapolis, and THOMAS DUNN, University of Toledo

Sixty-three female college students were tested in a counterbalanced design with computerized MMPI and group booklet mode of administration. State anxiety was measured before and after each testing session. The computer-based MMPI scale scores were shown to correlate as high with the booklet administration scores as correlations reported for comparisons between booklet and card form administrations or booklet-booklet administrations. When compared to the booklet version, the computer mode initially produced relatively high state anxiety levels. By the end of the test, however, no difference in state anxiety levels between the two modes of administration was found.

A Study of the Validity of Self-Reported and Observed Academic Growth

JOHN T. POHLMANN and DONALD L. BEGGS,
Southern Illinois University, Carbondale

The relationship between self-reported and observed academic growth was examined. Measures of self-reported and observed growth were obtained in three domains of academic behavior: simple cognitive, complex cognitive, and affective. The subjects were 142 graduate students enrolled in three different statistical methods courses. The results indicated that self-reported growth was most directly related to growth in attitudes toward the subject matter of a course. Self-reported and observed measures of cognitive growth were found to be independent.

The Internal Construct Validity of the Ross Educational Philosophical Inventory (REPI)

MAURICE W. VILLANO, The University of Connecticut

The purpose of this study was to construct-validate the REPI. The judgmental data of 25 content specialists were examined. The response data of 416 students were item analyzed and submitted to principal components analyses with orthogonal and oblique rotations. The items were generally representative of the content universe and 50 items optimally discriminated among the subjects. Both the REPI defined and factor derived scales were reliable. Uncorrelated factors identified the underlying philosophical dimensions, but could not be combined to fit the item grouping assumption of the REPI. A substantial amount of test variance was explained and factor invariance was demonstrated. Evidence pointed to the internal validity of the instrument.

Comparative Validation of a Direct and an Indirect Measure of Academic Self-Confidence

EDWARD A. KIRBY and JACK H. HILLER,
Southern Illinois University, Carbondale

Predictive validities were comparatively evaluated for a direct (SCAAS) and an indirect (ISCS) measure of academic self-confidence. Both instruments significantly predicted a variety of criteria for ninth-grade males (N=55). Predictions for females (N=44) were generally lower than for males, and the indirect measure was ineffective. The two measures were found to share roughtly 36% common variance, attenuated to 77% for males and 58% for females. The direct measure generally predicted better than the indirect measure on standardized ability tests. These results reversed those found using college males, but corresponded to results for college females.

26.18 MAINE ASSESSMENT OF EDUCATIONAL PROGRESS (D, SYMPOSIUM)

CARMEN J. FINLEY, American Institutes for Research, Organizer

The National Assessment of Educational Progress has been in existence for over seven years and has been actively collecting data since 1969-70. The continuance of this national research project is dependent upon its usefulness to a number of different audiences. One very important audience consists of state departments of education. With interest in state assessment or testing programs at an all time high, many states are considering whether or not the National Assessment model and/or materials are useful to them.

The state of Maine last year chose to conduct a needs assessment patterned after National Assessment and used materials released by NAEP. In doing so, they faced and made decisions regarding exercises, sampling, administration, scoring, analysis and reporting. This symposium relates the problems and triumphs encountered by the state of Maine in attempting to implement the NAEP model.

Specifically, approximately 2,000 17-year-olds were administered NAEP Writing and Citizenship exercises. While Maine contracted for the professional services of agencies directly involved in providing services to NAEP, they introduced several modifications to the NAEP model in the interests of economy:

1. Students were tested in groups only. Some of the exercises which were originally administered by individual interview were rewritten to group format.
2. State Department personnel were used to do the actual administrations instead of the usual paid and trained administrators used by NAEP.
3. Out-of-school 17-year-olds were excluded from the population, thus eliminating the need for costly door-to-door searching for this group.

The focal point of the symposium will be upon the methods used in Maine, how they duplicated the NAEP model, how they differed, and the pros and cons of introducing variations into the model. In addition, some of the results will be presented and discussed.

Instrument Design and the Analysis Plan. J. P. Bailey, Jr., Research Triangle Institute. The student instrument, consisting of 23 Citizenship, 7 Writing and 23 pupil background information questions, is discussed with emphasis on the role of both Maine State Department of Education personnel and AIR/RTI program designers. The Principal's Questionnaire, consisting of eight questions, is examined to show how it supplemented Department information on the sampled schools. The analysis plan is described, especially as to how it was decided upon in a collaborative effort to make NAEP national and regional comparisons, pupil background/response comparisons, and analyses leading to state policy questions.

Scoring of Open-Ended NAEP Exercises. Louise Diana, Westinghouse Learning Corporation. Hand scoring of open-ended exercises on a large scale creates special problems. The basic considerations which must be met in soaring NAEP exercises are examined and related specifically to the Maine study. The procedures which were used to train personnel for this task are discussed. Problems encountered in the actual scoring are used as examples to guide future work of this type. The guidelines, procedures, and problems in holistic scoring of an essay question are presented, discussed, and analyzed in detail.

The NAEP Sample Design, Data Collection Plan, and Data Analysis Procedures. David L. Bayless, Research Triangle Institute. The steps used in planning and designing the NAEP sample are described, and the procedures used to collect the assessment data presented. The statistical procedures used to analyze the weighted survey data are outlined. The important interrelationships between the instrument, scoring, sample design, data collection, data analysis and independent components of the assessment are stressed.

Interpretation and Dissemination for the State of Maine. Edward Hinkley, Maine State Department of Education (MSDE). The procedures whereby the statistical narrative report of the Maine Assessment Project was translated and interpreted into terms meaningful to the various interest groups within the state so that appropriate actions could be taken are discussed. Specific results and ensuing planned programmatic changes, as well as unforeseen happenings, are used as examples of how the NAEP model was applied in Maine and how it could be used in other states.

26.20 VIOLENT TEENAGE GANGS IN URBAN SCHOOL (A)

Attitudes of Male Gang Members Related to Innovative Education

ROBERT C. HUTCHINS, The Pennsylvania State University

This study investigated attitudes of known male gang members toward socialization agencies of our society. The investigation examined whether an innovative high school program such as the Philadelphia Parkway School can be effective in changing known male gang members' attitudes toward education, the family, government, and the self. This good's semantic differential scale was administered to 200 known male gang members, 50 of whom were students at the Parkway School. They were asked to judge seven concepts against a 12 scale bi-polar differential. Findings indicate that an innovative high school program can be effective in changing known male gang members' attitudes.

Violent Gang Membership and Nuclear and Companionship Family Structures

DONALD D. WARNER, The Pennsylvania State University

Utilizing participant-observer methodology, the role that the nuclear and companionship family structures play in violent gang membership was observed and studied. Data were collected for one year. Hypotheses were developed that account for the data. A framework, including the concepts of uncertainty absorption, rank and status hierarchy, and accommondation, was constructed. The framework and data show that family interaction patterns have a real effect on the gang participants of the male child. Further, the companionship family, a phenomenon not uncommon in the inner city, appears to play a significant role in this relationship.

A Model for Constructive Influence on Gang Behavior

BERNARD GARBER, The Pennsylvania State University

Through the use of participant observer methodology, the researcher gathered data on gangs and the influence of outside adults as models and influencers of change upon urban gangs and their teenage members. Two gangs were observed for six months following an informal seven-year period of interaction. In addition, official records were examined where useful. A model for effective change emerges from data related to the entry and role of adults and their effectiveness as change agents upon the violent behavior of teenage gangs.

Evolution in Patterns of Territoriality and Leadership in Philadelphia Gangs

MARTIN RYDER and MARGARET A. RAMSEY,
The Pennsylvania State University

Racism and other anti-black concepts encourage the need for the protective organization which is referred to as a gang. From the very beginning, the philosophical thread that governed the activities of the gang was control of its socio-spatial realm. This study, using historical and anthropological methodologies, studies this socio-spatial concept and develops a model of the inner workings of the violent gang operation. It points to the operation and reasons for gang activities and offers options to school officians for understanding these activities and conducting education in inner cities.

The Interaction Patterns and Normative Structure of a Violent Juvenile Gang and Its Relationship to School Achievement and Attendance in an Inner City

NATHANIEL KING, The Pennsylvania State University

This research investigated the structure and normative patterns of a violent gang. Participant-observer methodology was used to collect the data. School records and newspaper accounts were also utilized. The study centered on a violent male gang, 13-19 years of age operating in the inner city, their interaction and normative patterns and decision-making process. Particular emphasis was placed on observation of leadership "hard core" membership of the gang, approximately 17 youths. A descriptive analysis of this important influence in urban education is given, and operational conclusions are made based on data analysis.

26.21 NEW DEVELOPMENTS IN MASTERY LEARNING AND ITS MEASUREMENT (C, SYMPOSIUM)

WARREN G. FINDLEY, University of Georgia, ORGANIZER

Mastery learning has been the subject of basic theoretical contributions (Carroll, Bloom) and published reviews of early experiments (Bloom, Block). It is appropriate to review and evaluate second-generation variations on the original theme, as well as criticisms of the model in practical operation.

John B. Carroll, Educational Testing Service, will review pertinent research evidence on the importance of time in his original model and in learning generally, in school and out. He will evaluate challenges to the basic concept of time as a factor in his "Model of School Learning," with particular reference to aptitude as a measure of individual differences in rates of learning, the relation of time allowed to degree of mastery, and the importance of time in the measurement of mastery.

W. George Gaines, Louisiana State University at New Orleans, will describe and evaluate studies of the interactions within the Carroll model. This will include his own experimental studies of the interaction of quality of instruction and ability to understand instruction in anthropology units and other topics and subjects from elementary school through college levels. He will attempt a synthesis indicating where the expectations of the model are supported and where not, and crucial studies needed to settle moot points.

Benjamin S. Bloom, University of Chicago, will report findings on strategies he has encountered and developed in culturally different situations with particular reference to international extension of the concept. Different national perceptions of the goals of schooling and less formal provisions for education present special problems, especially in the measurement and evaluation of outcomes. Affective consequences of different mastery learning strategies will receive special attention.

James H. Block, University of California at Santa Barbara, will project his 1971 published summary of research on mastery learning, topic by topic: aptitude and rate of learning, ability to understand instruction, quality of instruction, perseverance time as a variable in attaining, affective consequences of school learning. He will stress studies of mastery learning in public school situations involving variously disadvantaged individuals: mentally handicapped, emotionally disturbed, culturally deprived.

John R. Hills, Florida State University, will describe his use of programmed arrangements in a course in tests and measurements required of all undergraduate students in preservice teacher training. In particular, he will describe simplified concepts as they permit understanding of basic relations, statistical and otherwise. In his program, over 90% of these students attain a mastery tailored to correspond to preservice needs and capabilities in tests and measurements, rather than more general or advanced mastery appropriate after initial experience in an ongoing teaching situation.

Warren G. Findley, University of Georgia, will discuss his model for teaching descriptive and inferential statistics to predoctoral graduate students in a college of education. He will report the results in highly improved mastery on standard measures from use of parallel forms of midterm and final examinations to show gains from small study groups, tutoring and review sessions. He will describe individual differences in improving mastery under the generally powerful motivation to improve mastery of statistics as a basic tool of doctoral research. Data over five cycles of the two-course sequence not only show more than 50% gaining from the reexamination privilege, but also show a steady

increase in proportion attaining A-level mastery, from below 40% to approximately 80%.

26.22 THE PLEISTOCENE EPOCH OF EXPERIMENTAL RESEARCH AND DEVELOPMENT TRAINING MODELS (C, SYMPOSIUM)

EVA L. BAKER and RICHARD A. McCANN,
University of California, Los Angeles, Organizers

The objective of the symposium is to present and evaluate a range of training models of potential utility in the transmission of research and development skills to the educational community. The symposium presenters represent agencies with strong commitments to research and development training. Because each training venture has a relatively short history, it should be instructive to contrast the instructional design alternatives, training settings target populations, goals and outcomes of each.

"A New Model for Training Evaluators" will be presented by Darrell K. Root and Daniel L. Stufflebeam, Ohio State University. The main features of a new model for training evaluators will be described. Those features are: (1) an operationally defined constituency in the form of a national consortium of educational agencies that employ evaluation personnel; (2) a research- and evaluation-based universe of evaluation competencies that undergirds all facets of the program; (3) a recruitment, selection, and placement system related directly to the resources and needs of the consortium; (4) an advisement and student evaluation system that relates student knowledge and skills to the universe of evaluation competencies; and (5) instructional units encompassing field- and university-based study that are modular and based directly on the evaluation competency universe. Results of operations will be described. The model is being developed by a consortium of agencies based at the Ohio State University Evaluation Center and is funded through the OSE Research Foundation by the Research Training Branch, National Center for Educational Research and Development.

Bela H. Banathy, Far West Laboratory for Educational Research and Development, will present a paper entitled "The Far West R&D Training Consortium." The Far West Consortium is in its second year of operation in designing and developing systems for the training of educational R&D personnel through pre-professional, entry-professional and advanced graduate programs. This presentation will report on three key dimensions: (1) the end of 1972 state of development of the various systems of the Consortium with special emphasis on the training development, evaluation, and internship systems; (2) a reassessment and revision of the original design, in view of data which have emerged from developmental and implementation efforts (particular attention will be given to an analysis of constraints); (3) program needs and their priorities within the context of a long range programmatic effort. Among other issues, special consideration will be given to (1) dissemination and utilization, (2) long term continuing education, and (3) short term training programs.

Eva L. Baker, University of California, Los Angeles, will speak on "The Practicum: A Departure in Development Training." An experiment in training, the UCLA Practicum, constitutes a new response to growing training needs in research and development. The practicum is focused on producing a replicable structure for instructional development training. This requires that materials and procedures used by trainees, graduate level trainers, faculty and administrative staff, be documented and revised until desired competency levels are obtained. Data from the first series of field tests will be reported, and analyses centering on the effectiveness and practicality of the diagnostic procedures, simulations and task sequence will be described. A critical feature of the practicum is that tasks are practiced in the context of real instructional development tasks. Because training is to be conducted for regular university students as well as university extension participants, techniques for adapting to individual differences will be treated.

27.01 EDUCATIONAL INNOVATION (G)

Citizen Participation in Educational Innovation: A Conceptual Model

PAUL R. DOMMERMUTH, RONALD E. HULL,
THOMAS PETRIE and DAN BAUMAN, S.U.N.Y at Fredonia

This paper traces the development of a community-wide planning council in the innovative attempts of a rural prototype school system in upstate New York. The goal is to fit the specific stages of development into a larger, sociological frame of reference. At stake are theoretical issues which bear directly on such focal community matters as citizen control of community affairs, and the operation of power structures in community life. Sociologically, these issues may be compared with such areas as health and mental health programs, ecological programs and the setting of priorities in numerous related community areas.

The Process of Educational Change at the School Level

MICHAEL FULLAN, and GLENN EASTABROOK,
Ontario Institute for Studies in Education

This paper is based on a large-scale survey research project of parents, students, teachers, and principals in 46 Ontario elementary and secondary schools concerning the school's approach to educational change. The principal hypothesis explored the relationships between organizational patterns and the change process. Data was gathered by means of questionnaires on the adoption of specific innovations, reports of the adoption process and various aspects of the decision-making, communication, and support structures focusing on the role of the users (parents, teachers, students) in the process of change. Several ways in which the data will be fed back to the sample schools for the purpose of working with them to derive implications of the findings for their own situation are discussed.

Organizational Feedback as a Factor of Educational Change: An Application of Open Systems Theory

MARK HANSON, University of California, Riverside

This study was conducted within the conceptual framework of open systems theory. It is a report on the effectiveness of the feedback process of the high school as a mechanism of educational change. The feedback process serves as the sensing device which reports to the decision-making center of the school regarding the needs of the "market" as well as the accreditation given to its product by the market. Without external feedback, an organization operates in the dark with respect to the needs of the outside world and tends to associate change with doing better what it is currently doing. The study concluded that the school districts examined paid scant attention to obtaining external feedback. Their decision-making centers were, therefore, relatively isolated from the institutions which they depend upon and which depend upon them.

Two Dimensions of School Autonomy as Determinants of School Output Emphasis

ROLAND J. LIEBERT, Florida State University

It is often assumed that schools attain maximum academic and professional quality if they have substantial autonomy from other public bodies. This paper presents a macro-level test of this proposition, using comparative state-wide data for all public K-12 schools in the contiguous United States. Two dimensions of autonomy are identified,

indicating both local and non-local penetration by external agencies or publics. As predicted, school systems that are autonomous on either dimension have higher levels of student achievement and staff professionalization. A third performance variable, non-curricular community public service programming, is positively affected by the local penetration dimension.

Change in Liberal Arts Colleges towards a Typology of Innovations

CHERYL ANN OPACINCH, Catonsville Community College

The purpose of this study was to identify measurable characteristics of innovations in higher education and to examine the utility of these characteristics in distinguishing among innovations. Judges were asked to rate 30 innovations on the degree of possession of 16 identified characteristics. From previous research, a rate of adoption was calculated for each innovation. An analysis of variance showed that three independent characteristics individually accounted for a significant amount of variation in rates of adoption. Regression analysis indicated that eight characteristics explained 77.08% of variation in rates of adoption. Perceptions of the characteristics of innovations do affect adoption rates.

27.02 TRENDS IN READABILITY RESEARCH (C, SYMPOSIUM)

ALAN H. ROBINSON, Hofstra University, Organizer

The objectives of this symposium are (1) to inform AERA members of some current trends in readability research based on psycholinguistic insights and a generative–transformational model of English grammar, (2) to question investigators involved in this research in order to seek out alternative approaches to measuring the syntactic complexity of school texts, and (3) to hear discussion and suggestions about the practical application of the alternative approaches for assessing, predicting, and controlling the readability levels of instructional materials. These objectives will be of particular interest to researchers and curriculum developers, as well as publishers and writers of instructional materials, if individualization of instruction is to become viable. Four alternative approaches to readability measurement will be included in this symposium.

"Lexical Redundancy Factors Influencing Readability" will be discussed by Oliver Patterson, City College of the City University of New York. Recent research in readability has made use of the cloze deletion procedure to determine the comprehensibility of written textual materials. Readability researchers, who have sought to determine the stylistic factors that contribute to cloze fill-ins, have primarily examined vocabulary and sentence complexity. Intrasentence factors, as well as lexical redundancy, have received little attention because many have viewed the sentence as the highest unit of possible analysis. When lexical redundancy and intrasentence factors are also considered determinants of a passage's readability, the validity of our current formulas may be greatly increased. Diversity of language, diversity of particular lexical classes, naturalness of language, and the subject matter of passages, are important factors.

"Using Students' Oral Reading Responses to Revise Text for Lower Readability" will be discussed by Daniel R. Hittleman, Queens College of the City University of New York. High school subject matter texts can be revised to an easier level of readability by using as a basis the oral reading responses of a randomly selected portion of the student population for whom the texts are intended. The oral reading analysis can be made by means of an instrument which indicates whether the apparent reading errors are caused by the readers' responses to grammatical or semantic language features rather than the readers' incorrect analysis of only the phoneme/grapheme relationships in words. The use of this psycholinguistic technique gives evidence of the phrases, sentences, and paragraphs that need revision, and an evaluation of the collected data indicates that these revisions may make the passages more readable than the original passages. Authors and publishers can use this "field testing" procedure to locate and eliminate syntactically and semantically confusing segments of the text prior to publication, which will allow low and average ability readers to decode meaning more easily.

"Using Students' Writing Patterns to Repattern Reading Material" is the title of the paper being presented by Fillmore K. Peltz, New York City Public Schools. Current research points to a developmental continuum of syntactic maturity in the learner. The research quantifies the type and number of transformations used at various stages of syntactic development. The transformations used in reading material constitute a significant factor in comprehension. The learner's "productive level" in his own writing may be the best "receptive level" to be included in his reading material. This developmental continuum of syntactic maturity has been virtually ignored in current methodology concerning the teaching of reading. Mounting concern, particularly at the secondary level, with the reader's inability to deal with the many concepts presented in reading material underscores the need for the direct and developmental training of the reader as he is asked to deal with increasing numbers of transformations. It points, too, to the necessity for preparing materials which control the number of transformations to be read at independent and instructional reading levels.

"Measuring Syntactic Complexity: A Formula" will be discussed by Alvin Granowsky, Research for Better Schools, Inc., Philadelphia, Pennsylvania. This presentation will cover theoretical and experimental findings underlying the development of a new formula for measuring the syntactic complexity of reading materials for primary grade students. The need for the control of syntax used in primary grade reading materials, and findings concerning the language production of children and its direction toward maturity will be discussed. Findings concerning the actual potential of transformational grammar theory in designating syntactic complexity will be examined, as well as the following criteria ultimately used to develop the syntactic formula: frequency of use in the language of children, research evidence, transformational grammar theory, and a lexical count measure. An experimental study validating the syntactic formula in predicting the complexity of two reading passages for children in grades two, three, and four will be included. Potential uses of the formula, as well as areas of needed research, will be discussed.

27.05 STRUCTURAL VARIABLES THAT ACCOUNT FOR THE DIFFICULTY LEVEL OF WORD PROBLEM EXERCISES IN MATHEMATICS (C, SYMPOSIUM)

MAX JERMAN, The Pennsylvania State University, Organizer

One direction being taken by those interested in doing research in problem solving is to examine the variables in the structure of the statement of the problem itself. A basic assumption of this approach is that until the structural variables which account for a significant amount of the observed probability, in word problem exercises, have been identified and well defined, attempts to design programs to teach students how to solve problems will falter. The studies reported in this symposium were done with students ranging from grade 4 to college level. The structural variables examined range from simple recall to variables which attempted to measure syntactic complexity of the sentence structure of the problem statements themselves. Throughout the studies there is a remarkable consistency in the set of general structural variables which do account for relative difficulty in word problems for students of different ages. Eventually teachers and curriculum writers may be able to use these variables to prepare word problem exercises of a predicted level of difficulty.

"Linguistic Variables in Verbal Arithmetic Problems" will be presented by Ed Beardslee, State College, Pennsylvania. In this study, 12 linguistic variables which were found to be related to the linguistic ability of a student and to the rated quality of his written discourse were used to analyze verbal arithmetic problems. Three forms of a verbal problem set in which the number of the words in the problem statements were systematically varied were administered to classes of students in Grades 4-8. Using regression analysis, those variables were identified that accounted for a significant amount of the observed variance in the error rate.

Blair Cook, Pennsylvania State University, will speak on "Arithmetic, Linguistic, and Algebraic Structural Variables that Contribute to Problem Solving Difficulty of Word Problems in Algebra." The study attempted to identify and define structural variables that seem to account for a significant amount of the variance in the observed probability correct for a set of elementary work problems in beginning algebra solved by college students. Researchers have been moderately successful in identifying variables such as the number of arithmetic operations, and the order of arithemetic operations, which account for a significant amount of the variance in the observed probability correct of word problems for elementary grade students.

These same variables were tested in the present study with additional variables such as the number of words and the number of sentences in the problem, and algebraic variables such as the number of sign changes on a number or variable. The arithmetic, linguistic, and algebraic variables were defined and the used in a stepwise linear regression model.

"Predicting the Relative Difficulty of Problem Solving Exercises in Arithmetic" is the topic chosen by Max E. Jerman, Pennsylvania State University. The results of a series of studies, using linear regression models, seem to indicate that a small, but manageable set of variables, which strongly influence the difficulty of verbal problems, have been defined in such a way as to pursue a test of their adequacy by using them in preparing exercises of a specified level of difficulty prior to their solution by students.

The objective of this study was to test these variables by preparing sets of verbal problem solving exercises having a predicted level of difficulty, in terms of a predicted probability correct, and to compare the predicted level of difficulty with the actual performance of students in public school classrooms. A basic assumption of this approach is that the structure of the arithmetic problem itself, to a large measure, determines its difficulty level. The study attempted to shed light on ways to control the relative difficulty of verbal problem-solving exercises in arithmetic, grades 4-9.

Max Jerman and Sanford Mirman, Pennsylvania State University, will present "Structural Variables in Problem Solving Exercises Solved by Prospective Elementary School Teachers." Three sections of a methods course for perspective elementary school mathematics teachers were given a set of word problem exercises under different timed conditions: 20 minutes, one hour, and no time limit.

The present study attempted to determine if the same set of variables which were found to contribute to the relative difficulty of problem solving exercises in Jerman's (1971) study using students in grades 4-9 would also account for a significant amount of the variance in the relative difficulty of verbal problems for perspective elementary teachers. In addition, the order of entry of the variables in the stepwise linear regression was examined to attempt to isolate the effect of different time limits.

Angelo Segalla, Golden West College, will speak on "Structural Variables in Problem Solving Exercises Solved by Junior College Students." The purpose of this study was to identify structural variables in arithmetic word problems that predict problem solving difficulty for junior college students. The following questions were considered: (1) In what *order* or importance do the variables account for word problem solving difficulty for junior college students? (2) Into how many *subsets* can the original set of variables be broken down so that all elements of a given subset tend to measure the same structure? (3) Does the *order* of appearance of the variables that explained problem solving difficulty for sixth-graders (Loftus, 1970) differ from that of junior college students? (4) Which variables play the most important role for a selected subset of problems? (5) Does the order of importance of the variables differ for selected *subgroups* of the sample? (6) What linear combination of the original variables is maximally correlated with what linear combination of variables conjectured to measure problem solving difficulty? (7) Based on multivariate analysis, predict the success or failure of any new problem.

27.06 CONCEPTUAL APPROACHES TO CURRICULUM DESIGN AND EVALUATION (B)

Model for the Evaluation of an Innovative Program for Assessing and Instructing Four-and-Five-Year-Old Children

CLIVE C. BEATTIE, La Porte Community School Corporation

This model is designed to engage in formative evaluation and, after the improvements in the program have been made, engage in summative evaluation. It will assess the development in the cognitive, affective, and psycho-motor domains of four-and-five-year-old children. The data collected from these domains will be analyzed and the results used in designing an instructional program. The educational importance of this model is that it is described in terms of parents, teachers, and pupil judgments and also in the developmental growth of the student in the cognitive, affective, and psycho-motor domains.

A Study of the Effects of Curriculum Engineering Systems

GEORGE A. BEAUCHAMP, Northwestern University

An investigation of the effects of the installation of curriculum engineering systems in two Illinois school districts is described. Treatment effects were the organized procedures for curriculum planning and implementation functions, the specific actions taken by teacher personnel in execution of the procedures, and leadership actions. Treatments in the two school districts varied. Specific objectives were to observe the effects of the treatments upon: (1) general teacher attitudes, (2) attitudes of teachers toward participation in a curriculum system, and (3) actual behaviors of teachers as participants in curriculum functions. Analysis of two years' data is discussed in light of the longitudinal design of the study.

Curriculum Evaluation and Literary Criticism: The Explication of an Analogy

EDWARD F. KELLY, Syracuse University

This study sought to discover the extent of the parallel between the processes of curriculum evaluation and literary criticism in order to clarify the evaluation process. A consideration of both literatures confirmed the presence of the analogy and allowed the development of a concept of descriptive validity as well as the identification of three different types of descriptive data. In addition, a process of judgment and justification was presented and a concept of publicly reasonable judgment developed. Lastly, six traditional literary devices were introduced and their analogies in curriculum explained and exemplified.

Either/And Not Either/Or

LOUISE L. TYLER and M. FRANCES KLEIN, U.C.L.A.

The Tyler-Klein Conceptual System synthesizes some aspect of the work of various curriculum workers as well as places curriculum in a

social-political context. It has been developed to further productive dialogue rather than rhetorical exchanges between various ideological positions. The work of such persons as Bellack, Eisner, Goodlad, Huebner, Krathwohl, MacDonald, Popham and Tyler are discussed and incorporated in an expanded system for curriculum decision-making. Five sources from the social-political context affecting curriculum decision-making are identified. This conceptual system should provide direction for productive research into curriculum.

27.08 USES OF THE COPING ANALYSIS SCHEDULE FOR EDUCATIONAL SETTINGS (CASES) IN RESEARCH AND TEACHER-TRAINING (C, SYMPOSIUM)

ROBERT L. SPAULDING, California State University, San Jose, Organizer

The *Coping Analysis Schedule for Educational Settings* (CASES) has been under development as an instrument to measure overt behavior of children and young adults in school settings since 1961. It has undergone a series of field tests and been revised many times to make it useful in educational research and teacher education. During the past seven years a number of validity studies have been completed and it is now possible to report to the research community the various ways in which the CASES instrument has been found useful.

The purpose of the symposium is to present four types of uses in which it has been effectively employed and provide a forum for sharing information about reliability, validity, training of data collectors, calculation of various behavioral coefficients from raw frequencies, development of classroom treatments based on CASES categories, and recent developments of matrix analysis using CASES and the *Spaulding Teacher Activity Rating Schedule* (STARS) in combination.

Emphasis of the symposium is on the recently developed CASES Coefficients, based on combinations of categories, which have been found to correlate significantly with academic achievement. Emphasis is also placed on teacher education, pre-service and in-service. Various techniques used in teaching the six suggested CASES treatment schedules will be discussed. The six treatments designed which are using CASES categories are based on an aptitude by treatment interaction (ATI) assumption. Construct validation studies of the CASES treatments will be discussed. A third emphasis is on the use of CASES as a dependent variable in measuring teacher and counselor effectiveness. Implications regarding accountability and teacher tenure will be discussed.

Artis J. Palmo will describe his use of CASES as a dependent measure in an experimental study of four approaches to counseling parents and children. Mary Papageorgiou will present results using CASES in a five year longitudinal compensatory education program. CASES was used as a set of behavioral objectives in teacher training and as a measure of the effectiveness of the experimental treatment schedules developed in the project.

Marilyn Thursby has been working with the School Board of Alachua County, Florida, to provide improved methods of in-service teacher education. She will report on studies of feedback of CASES data to teachers as a technique of improving teaching effectiveness. Rebecca Hines and Brenda Fikes have been involved in pilot studies using CASES and STARS in combination. They will report on techniques used in evaluation of Head Start Training and in in-service teacher training at the junior high school level. Robert L. Spaulding will discuss recent developments in classroom transactional analysis using treatments based on six matrices of CASES and STARS categories.

Barak Rosenshine of the University of Illinois at Urbana and Harold Morine of the Whisman School District of Mt. View, California, will discuss the implications of the studies reported for teacher education and research on teacher effectiveness.

27.09 TEACHER-PUPIL BEHAVIOR IN THE CLASSROOM SETTING (B)

Dimensions of Reading Behavior among Competent Fifth Graders

EDMUND H. HENDERSON, University of Virginia, and BARBARA H. LONG, Goucher College

Reading behavior of 123 achieving fifth graders of both sexes was assessed using standardized tests, library records, self-reports, and time diaries. These data along with measures of self-other orientation, attitude, SES, Intelligence, and time spent at various activities were submitted to a factor analysis. Seven factors emerged: (1) "test competence," (2) "self-other distance," (3) "biological sex," (4) "quantity and variety of reading," (5) "avid reader who conforms," (6) "fondness for reading with independence," (7) "middle-class attachment to parents." It was concluded that patterns of independent reading as well as interest in reading involve different life styles and are relatively independent of test competence.

Teacher Verbal Behavior and Classroom Social Structure

FRANCES M. DAILY, University of Dayton, and JAMES A. PHILLIPS, JR., Kent State University

The research analyzed fundamental differences in classroom social structures as a function of teaching behavior. The problem was: (1) to devise a descriptive and quantitative measure of structural differences, and (2) to examine how structural differences are related to teaching behavior. Based on conceptual developments in classroom sociometrics, an Index of Centrality-Diffuseness was constructed to differentiate between social networks on a continuum. Flanders Interaction Analysis data from 18 teachers were correlated with C-D Indices derived from sociometric data of their 576 pupils. Significant multiple *rs* ranged between .51 and .86 for 11 socioquestions and 10 Flanders categories.

Pedagogical Frames and Teaching Process: A Report from an Empirical Curriculum Project

ULF P. LUNDGREN, University of Göteborg

The paper is a summary of a long-range project. Teaching process data was collected on two levels. On one level it was collected as extensive data with the lesson as the analytical unit. On the other level, it was collected based on the single utterance within the lesson. The results indicate that the teaching pattern can be explained by the steering function of the pedagogical frames (objectives, class composition, time at disposition). The frames form the grammar of the classroom language as well as the pedagogical roles of the students. The theoretical explanation is formed in respect to curriculum theory and theory on teaching.

27.10 ADAPTING INSTRUCTION TO INDIVIDUAL DIFFERENCES (C)

A Comparison between Instructional Styles for First-Graders

BETTYE L. JENNINGS, Michigan State University

In this study, first-graders were assigned to one of five instructional types based on their performance on the Illinois Test for Psycholinguistic Abilities. Instructional strategies were devised to teach 25 reading objectives in each of the five instructional types. Experimental children were instructed according to assigned type and their achievement was compared to a matched group that was instructed in a

traditional manner. There were significant differences between the groups favoring the idea of matching children to instructional style.

Setting Structure, Involvement, and Developmental Status as Learner: Elements of the Problem of the Match

JOSEPH C. GRANNIS, MICHAEL B. GREENE, FAY W. LOGAN, and JOSEPH B. ROBERTS, Teachers College, Columbia University

In order to study the appropriateness of different structured classroom settings for children's learning and development, CCEP has constructed IRIS (Involvement Ratings in Settings) and PRIN (the Pupil Role Interview). IRIS, a seven dimensional scale of affectivity by non-verbal indices, has been employed in two classrooms for each of three Follow Through programs. PRIN, which codes both the developmental stage and the setting content of children's interview responses, has been used to study 480 children from these same Follow Through and from comparison programs. Results will be interpreted in a framework of questions about the match between a child's effective environment and his developmental status as a learner.

The Influence of Choice on the Acquisition and Retention of Learning Materials in Different Modes of Instruction

MAURICE KALIN and ROGERS McAVOY, West Virginia University

The purpose of this study was to investigate the strategy of allowing a student to choose the sensory channel in which he learns most efficiently and to determine if his choice resulted in increased learning rates. The data indicate the following: (1) that a student has a preference for learning in a sensory input channel, (2) that a student knows in which sensory channel he learns most efficiently, and (3) that allowing a student to learn in the sensory channel in which he thinks he learns most efficiently results in significantly higher learning rates than in channels unlike his choice.

An Analysis of Learning Efficiency by Mode of Instruction when Related to Reading Speed and Comprehension

WILLIAM DOROZINSKI, ROGERS McAVOY, MAURICE KALIN, West Virginia University

Learning efficiency may be expressed as a ratio between gain scores divided by time in instruction. In an open learning center efficiency can be determined and related to other learner variables. Forty-eight college sophomores were stratified by high-low reading scores on the Davis Reading Test. They were exposed to three modes of instruction in three different units. High readers had a higher learning efficiency in the reading mode and a lower efficiency in the auditory mode. Slow readers were just the reverse. In an auditory mode, high readers spent more time, had less gain, and lower retention.

Changes in First-Grade Achievement and the Predictive Validity of I.Q. Scores as a Function of an Adaptive Instructional Environment

JEROME ROSNER, L.R.D.C., University of Pittsburgh

Changes and innovations have been introduced into the primary-grade instructional program of a developmental school periodically over the past five years. The pervasive purpose of these modifications has been to define the elements of an adaptive instructional system wherein the individual differences of the learners are a critical variable. The instructional innovations are described, and data are presented to show significant gains in first-grade achievement that cannot be explained by I.Q. scores but, rather, appear to be directly related to the extent to which an adaptive mode of instruction has been achieved.

27.12 THE NATIONAL TEST-EQUATING STUDY IN READING (D, SYMPOSIUM)

CHARLES HAMMER, U.S. Office of Education, Chairman

Origins and Historical Antecedents. Richard M. Jaeger, University of South Florida. The idea of equating achievement tests and general ability tests is not new. Edward Cureton first called for such a study in 1940, in a paper presented before the Conference of State Testing Leaders. The American Educational Publisher's Institute has had a committee on test equating for over 20 years. Despite this early interest in an equating study, the incentive was not sufficient to produce action. In 1968, the U.S. Office of Education faced a need for comparable achievement test information on a nationally-representative sample of elementary school children. A test-equating study seemed the only viable option. Since seven achievement tests account for over 95% of the achievement information collected in the nation's schools, it was realized that conversion of available data to a common score scale would provide the required generalizability. The design of the current study was formulated in 1970, and the Educational Testing Service was awarded a contract to conduct the study in 1971.

Design of the Study. William H. Angoff, Educational Testing Service. The National Test-Equating Study in Reading was separated into two principal parts. One part involved the equating of each of seven tests to each of the others. The other part involved the preparation of norms for the test designated as the "anchor." Once the distributions of scores for the norms population were developed in terms of the anchor test, the equating results were to be used to transmute the scores on the scale of that test to the scales of each of the others. The pattern of administration of the anchor test for norms is a simple one; it was administered by itself to a representative sample of the nation's students at grades 4, 5, and 6. The pattern for equating, however, was more complex, calling for the administration of all possible pairs of the seven tests in counterbalanced order to ¾ of the equating sample, and the administration of two forms of each of the seven tests, also in counterbalanced order, to the other fourth. The administration of the two forms was to be used mainly for making parallel-forms reliability estimates; the administration of the pairs of the seven tests was to be used as the principal source of data for equating. Plans were made in the study to investigate the stability of the equating results and also to investigate the generality of those results across different types of populations.

Sample Design for the Anchor Test Study. Morris H. Hansen and David W. Chapman, WESTAT Research, Inc. The paper describes the study design and the basis for decisions made in an effort to achieve an approximately optimum sample for the Anchor Test Study. These decisions were guided by existing sampling theory, some extensions where needed, available empirical data, and some assumptions. One decision made early that affected other aspects of design was that, in order to control decentralized sample selection, *all* students within the eligible grades (4, 5, and 6) within a school were to be tested, rather than allow subsampling within schools. Other deisgn questions concerned the choice of sampling units, the stratification criteria to be used, the optimum allocation of the sample to strata, and the use of approximately optimum probabilities in the selection of the sample. Variance estimates from the study, and a supplemental study based on the study returns, will evaluate the design decisions.

Administration of the Study. Peter G. Loret and Alan Seder, Educational Testing Serivce. After contacts with each of the State Departments of Education, district and LEA superintendents were asked to consider the participation of randomly selected schools within

their jurisdictions. Upon receipt of approval, school principals were invited to participate in the Study and were asked to appoint a School Coordinator. The Coordinator provided the enrollment and school descriptive data required for the assignment of tests and the shipment of test materials.

Score rosters, showing raw scores, publishers' national percentiles and stanines, and summary statistics, for both subscores and total reading scores, were provided to each participating school. Reports were released to schools by the first week in June.

Results of the Study. John C. Bianchini, Educational Testing Service. The equating of vocabulary scores, reading comprehension scores, and total reading scores of seven reading tests at grades 4, 5, and 6 was carried out by six methods. The equated scores for each test were evaluated on the basis of both consistency across methods of equating and estimated error of equating. Furthermore, generalizability of equated scores was evaluated by comparing the results obtained from the total equating sample with those obtained from eleven overlapping subgroups derived from the total equating sample. The subgroups were identified on the basis of sex, IQ, race, and the schools' socioeconomic characteristics. Consistency of equated scores across methods and subgroups is discussed.

Using the national norms obtained in the Anchor Test Restandardization Study and the equated scores for each test, individual score norms and school mean norms were developed for each of the three reading scores for all seven tests to provide normative data for score interpretation.

27.15 THE UNIVERSITY AND ITS ENVIRONMENT: AN ENVIRONMENTAL INFORMATION DELIVERY SYSTEM (A, SYMPOSIUM)

EUGENE CRAVEN, The University of Wisconsin System, Organizer

Faced by demands for increased accountability from state legislators, educational governing boards and the general public, many institutions of public higher education have sought to demonstrate more convincingly their responsibility in the effective and efficient planning, allocation and utilization of scarce resources. Despite their efforts, public higher education continues to face hostile state legislators and state constituents who have begun to challenge the previously unquestioned value of a higher education at any price. Educational institutions continue to face the prospects of austere and, in some instances, potentially damaging fiscal measures. Many institutions, it seems, have failed to keep in touch with the pulse of state needs and desires for public higher education and failed to maintain viable linkages to dominant and emerging influential elements within the state political arena.

The thesis offered by this symposium is that an information delivery system concerning the environment (or external dimension) of higher educational institutions can be developed which could: (1) provide data to educational decision-makers which would assist them in accessing current and future needs and desires of their state constituencies, and (2) provide a basis from which to address those needs and re-establish viable university-state linkages.

The objective of the symposium is threefold: (1) to examine several exploratory research efforts in three primary areas of the proposed environmental information delivery system, (2) to demonstrate the use of an environmental information delivery system in dealing with a hypothetical higher educational problem, and (3) to evaluate the utility-potential of such information for higher educational decision-makers. The proposed environmental informational delivery system contains three primary dimensions: state constituencies, the state legislative arena, and issues. The first three symposium presentations will examine methodologies for developing basic information concerning each primary dimension.

The first presentation explores the application of trend surface analysis to selected constituency variables. "Mapping and Interpreting Constituency Characteristics" will be presented by Donald N. McIsaac, Jr., of the University of Wisconsin-Madison. The purpose of this presentation is to illustrate the kind of constituency-related data that might be useful to decision-makers in higher educational planning, and to examine the utility of this methodological technique in providing useful information for higher educational decision-making.

The second presentation explores the application of multivariate techniques to voting data within a state legislative setting in order to identify the primary legislator voting-clusters active within the state legislative arena. An approach will be presented for analyzing the identified voting clusters in terms of constituency, legislator and issue-related variables. "An Approach to Profiling State Legislator Voting-Behavior" will be presented by Eugene Craven of the Office of Analysis and Information Services, University of Wisconsin-Central Administration. The application of selected methodological techniques in the identification and analysis of legislator-voting groups will be illustrated, and the potential of such information for providing educational decision-makers with an improved base for describing, understanding and anticipating legislator preferences on issues of educational significance evaluated.

The third presentation explores an approach to identifying and analyzing the value-interest structure of educational issues within the state political arena. "An Approach to Educational Issue Analysis" will be presented by Jacob O. Stampen, Office of Analysis and Information Services, University of Wisconsin-Central Administration. He will examine a means by which the basic trends in the dominant value-interest structure of state politics can be identified, described and understood, and evaluate the utility of such information in the context of higher educational decision-making.

After each of the primary dimensions of the proposed environmental information delivery system has been examined by means of the three presentations described above, the separate capabilities will be demonstrated in an integrated approach dealing with a hypothetical problem in a higher educational setting. The fourth presentation, "A University Environmental Decision-Making Model," will be presented by B. Dean Bowles, Donald N. McIsaac, Jr., Jacob O. Stampen and Eugene Craven, The University of Wisconsin System. The purpose of this presentation is to explore the operational capability of the proposed environmental delivery system in a hypothetical decision-making situation in higher education.

Following the four presentations, Steven R. Mitchell, Dean of the College of Sciences & Arts, Washington State University, will evaluate the utility potential of the information that can be generated by such an environmental information delivery system for decision-making in higher education and will assess the feasibility of incorporating such a system in the day-to-day decision-making processes of higher educational institutions.

The significance of the symposium lies in the critical nature of university-state relations in higher education today. Institutions of higher education must respond successfully to the challenges of increased accountability or risk long-run impairment to the quality and effectiveness of their program missions. This symposium will attempt to deal with a major factor in enabling institutions of higher education to adapt to the realities of their new state political environments.

27.16 MEASUREMENT METHODOLOGY II (D)

A Multivariate Analysis of Rationally Derived Categories of Learning Disorder

BARRY L. MALLINGER, STEVEN V. OWEN, WILLIAM McCOOK and ROBERT K. GABLE, University of Connecticut

While the WISC and Bender-Gestalt are widely used for differential diagnosis, there is a need for empirically determined criteria for classification. Multivariate techniques seem especially promising in classification problems. This study determined the extent to which such an approach can classify children into rational, *a priori* categories of learning disorder. Two discriminant functions were obtained and found to be highly significant. Six predictors within each function were identified as optimum. The efficiency of the functions in predicting criterion group status was demonstrated. Educational implications are discussed.

The Effects of Induced *E* Bias on the Reading of Instructions during a Behavioral Experiment

JOHN J. KENNEDY and VICTOR M. RENTEL, The Ohio State University; ROBERT GRIFFIN, Western Michigan University

The effects of experimentally induced *E* outcome expectancy with respect to suprasegmental phonemes emitted by *E*s during the instruction reading phase of a typical behavioral experiment were assessed. *E*s were led to expect differential conditioning performance from Ss prior to the experiment. *E*s' directions to Ss were audio-tape recorded and ratings on pitch, stress, and terminal intonation were provided by trained judges. Analyses of data (ANOVA) produced several marginal findings, but, generally, this research failed to demonstrate that bias is communicated through systematic variations in the measured language features.

The Effects of Diverse Test Score Distribution Characteristics on the Estimation of the Ability Parameter of the Rasch Measurement Model

BEULAH K. CYPRESS, Florida State University

The potential of the Rasch model to develop scores, on a ratio scale, suitable for interindividual and intraindividual comparisons, from intact groups with disparate distribution characteristics was investigated. Thirty-five groups were structured according to seven levels of skew and five group sizes using empirical response data to a 90-item mathematics achievement test. Rasch scores were compared using a generalized distance function. The study revealed that Rasch scores were not independent of the underlying raw score distributions, and that standard errors of estimate of log item estimates were affected by degrees of positive and negative skew.

Empirical Option Weighting with a Correction-for-Guessing

RICHARD R. REILLY, Educational Testing Service

Previous reports have suggested that the lowered validity of tests scored with empirical option weights might be explained by a capitalization of the keying procedures on omitting tendencies. A procedure was devised to key options empirically with a "correction-for-guessing" constraint. Use of the new procedure with GRE data resulted in somewhat smaller increases in reliability than those observed when unconstrained procedures were used, but validities for quantitative subforms were not lowered, and validities for verbal subforms were lowered only slightly.

Stability of Various Item Discrimination Indices

ALBERT C. OOSTERHOF, Florida State University

The stability of various item discrimination indices when a particular item assumes membership within different sets of items was investigated. Results suggest that when item discrimination is used as a significant factor in determining which items from several forms will be selected for inclusion in a test, the actual items selected are less a function of the chance combinations of items which made up the various forms when Gulliksen's item reliability index and Findley's difference index are used as indices, than when phi coefficients, and particularly point biserial and biserial coefficients are used as estimates of item discrimination.

27.17 POTPOURRI (A)

Conflict and the Collaborative Process: Antecedents, Characteristics, and Consequences of an Inter-agency Program

RICHARD G. TOWNSEND, Boston University

A conflict-cooperation-conflict model is offered of the genesis, functioning, and aftermath of an inter-governmental and inter-professional program in a major city. Outputs prior to this linkage are perceived as generating major conflicts which eventually are settled by decisions to parcel out certain school-building responsibilities among city planners, municipal bondsmen, and public architects. This inter-agency effort is then seen as producing a number of outputs which in turn generate other conflicts which can be traced back to the new policy-makers and, even further back, to conflicts which preceded the collaboration.

A Reformulation of the Teacher Survival Process

DANIEL J. BROWN, State University of New York at Buffalo

This study demonstrates the application of a simple mathematical model to the prediction of teacher cohort size. Previous research on the attrition of teachers from school districts has been concerned with the forecasting of the number of teachers remaining in a group who joined at a given year. Although these forecasts were unsuccessful, the failure of the geometric model to predict attrition accurately leads to two general considerations—the differences among teachers as to leaving behavior and the reinforcement of staying behavior. These two explanations are incorporated into the harmonic law, a new model which predicts the amount of attrition with a high degree of accuracy. Implications for futher theoretical development and for school district planning are discussed.

School Board Member Recruitment in Ontario: Structure and Process

PETER J. CISTONE, Ontario Institute for Studies in Education

Employing a process model of political recruitment, this study investigated the relative impact of a school district's social, economic and political structure on school board member recruitment. The process data were collected by means of structured interviews with neophyte school board members in a stratified sample of school boards in the province of Ontario. Structural data were drawn from government documents and records and, from reports of political party officials. Results of the study indicated that the social, economic and political structure of school districts was a determining factor in school board member recruitment patterns.

27.18 FACTOR ANALYSIS APPLICATION (D)

A Case For Using Factor Scores Rather Than Summative Scores in Educational Research

HOLLIE B. THOMAS, University of Illinois

This study was designed to investigate the validity of using scale scores in lieu of factor scores for factors derived from a factor analysis

technique. Subjects were ninth grade students in a large metropolitan area. The Work Values Inventory (Super, 1970) was selected for use in this study because of its purported factor structure and the method utilized for scoring. Factor analysis, correlation, and analysis of variance were employed to analyze the data. The two methods of scoring produced substantially different results having an average overlap for corresponding scales of 49%.

A Multivariate Approach to the Validation of a Behavioral Checklist

JOHN L. WASIK, North Carolina State University

Checklist instruments have been widely used as an efficient method for the collection of behavioral information. This paper presents the rationale and a numerical example of a multivariate approach to the validation of a behavioral checklist. Responses of teachers to a student learning problems checklist were subjected to a principal components analysis. The 8 identified factors were related by canonical correlation procedures to student scale scores on the *Children's Personality Questionnaire* and to grade level, sex and underachievement status via a multivariate analysis of variance. Results were interpreted as providing support for the validity of the checklist.

Indices of Complexity and Interpretation: Their Computation and Uses in Factor Analysis

RICHARD J. HOFMANN, Miami University

In this methodological paper two indices are developed: a complexity index and an interpretation index. The complexity index is a positive number indicating on the average how many factors are used to explain each variable in a factor solution. The interpretation index will be positive ranging from zero to unity; unity representing a perfect independent cluster solution and zero representing the poorest factor solution in terms of complexity. Through empirical application to the classic 24 psychological variables it is demonostrated that the indices may be computed by hand and are easily interpreted providing a basis for comparing different factor solutions.

The Incorrect Measurement of Components

SILAS HALPERIN, Syracuse University

It is not uncommon to see the loadings of a rigidly rotated principal components solution used as the weights of standardized variables to calculate component scores. This procedure is mathematically incorrect and will lead to scores which are highly correlated in many cases. In addition, this procedure will yield variable by component correlations which preserve high loadings but not low ones. Components are shown by example to be seriously distorted. The study concludes that loading can safely be used as weights only when the original principal components solution is not rotated.

28.01 REORGANIZING FOR LEARNING: AN EXPERIMENT IN MULTI-UNIT INSTRUCTION (B)

Reorganizing for Learning: An Experiment in Multi-Unit Instruction

LARRY L. LORTON, Warren City Schools

The McKinley Project represents a systems approach to reorganizing instruction. Reorganization was based on three conclusions drawn from a comprehensive investigation of research and practices by the non-profit, foundation-funded Commission on Public Personnel Policies in Ohio. The conclusions were as follows: (1) variance within a grade level on many learning variables is greater than between grade levels, hence, nongradedness; (2) self contained classrooms are least effective among alternatives, hence, teaming; and (3) retention seldom benefits the child, hence, nonretention. Teacher competencies, new relationships with colleges and universities, systematic inservice training, instruction aids and media, behavior based instruction, parent involvement, peer teaching, and criterion-referenced evaluation constituted the instructional design. Reality testing was achieved by conducting the experiments in a blue-collar community, in an old "box" building, and within normal budget limitations.

28.02 TOWARD A MANKIND CURRICULUM (B)

Toward a Mankind Curriculum

JOHN I. GOODLAD, UCLA and Educational Inquiry, Inc.,
GERHARD HIRSCHFELD, Director, Council for the Study of Mankind, M. FRANCES KLEIN,
JERROLD M. NOVOTNEY, and KENNETH A. TYE,
UCLA and Educational Inquiry, Inc.

The development among children of an all embracing "mankind perspective" must become an objective of schooling if man is to survive in this world plagued by air and water pollution, the threat of nuclear war, the exhaustion of natural resources, etc. A rationale for such a social studies curriculum was developed and implemented. Evaluation of a summer school session taught at UCLA by three teachers at the upper elementary school level indicated the rationale was viable but in need of further investigation under other geographic and cultural circumstances.

28.04 PSYCHOLOGICAL PROCESSES IN CREATIVE THINKING AND PROBLEM SOLVING (C, SYMPOSIUM)

JOHN FELDHUSEN, Purdue University, Organizer

This symposium is concerned with psychological processes in creative thinking and problem solving. Creative thinking probably plays a major role in problem solving. Therefore it is appropriate to consider the two as closely linked processes. From a scientific point of view, the symposium will serve to clarify our knowledge of psychological processes in creative thinking and problem solving, and to generate new research and theory development in this area. From an educational point of view, the symposium will provide some new insights for the assessment and training of creative thinking and problem solving abilities. Training in these areas is often neglected in the schools. However, creative thinking and problem solving abilities are often regarded as the highest level goals of education.

"Attitude and Personality Measures of Creative Potential" will be presented by Gary Davis, University of Wisconsin. Creative ability is probably a central aspect of problem solving behavior. Finding a valid measure of creative ability is a central concern of researchers in creative behavior. One recent and very promising approach has been the use of biographical, attitudinal, and personality measures. The assumption has been that creative productivity is due in very large part to certain identifiable attitudes and personality traits which predispose an individual to seek novel problem solutions and to behave in an open-mined, flexible, creative fashion. A number of personality studies have shown that highly creative people do, in fact, display a recurrent constellation of such attitudes and personality traits as open-minedness, high curiosity, high energy, high self-confidence, and a strong appreciation for original ideas.

E. Paul Torrance, University of Georgia, will speak on "Dyadic Interaction and Creative Thinking and Problem Solving." A series of experiments on the role of dyadic interaction in creative thinking and

problem solving will be reviewed. Generally, dyadic interaction enables individuals to attain higher levels of originality than they would otherwise attain, and members of dyads express greater enjoyment and endurance in creative tasks than when working alone. These results, however, do not occur among children younger than five years and when members of dyads are permitted to duplicate one another's ideas rather than build upon them. A new series of studies, undertaken to study systematically the interaction of age, sex, and training in creative problem solving with dyadic arrangements, will be discussed.

"Problem-Solving and Concept-Forming Behaviors" will be presented by Phillip Merrifield, New York University. Problem-solving behavior often seems to involve conceptualization. Concept-forming involves generating or choosing a class-label; much attention has been paid to optimum strategies for teaching these processes. Solving problems requires more: concepts are to be combined, nested, sometime redefined, to form a hierarchy which itself is built on relational thinking.

Two attributes of concept-forming processes, consistency and utility, will be considered. Some criteria of consistency are: degree of homogeneity of examplars, closure reported by concept-former, and differentiation of one "consistent" concept from another. Some criteria of utility are: ease with which a concept may be nested with others, ease of restructuring examplars to form alternative concepts, and degree to which new examplars may be described and searched for. The relevance of these attributes of concepts to problem solving, and to the teaching and assessment of concept forming and problem solving, will be presented.

"Logical Thinking Processes in Problem Solving," presented by Donald M. Johnson, Michigan State University, is concerned with the role of logical thought processes in problem solving. The first part of the paper will focus on the nature of the task as related to logical thinking. The second part will review a number of psychological processes in logical thinking. The last part will be concerned with difficulties which human problem solvers face in logical thinking, and their remediation. The paper will include a review of theory and research related to logical thinking in problem solving, and a discussion of the author's extensive research in this area.

28.05 COMPUTER-ASSISTED INSTRUCTION: I (C)

Distraction, Response Mode, Anxiety, and Achievement in CAI

SIGMUND TOBIAS, City College,
City University of New York

The effects of distraction, mode of responding to CAI, and anxiety were studied in 2 x 2 design (N = 121). The effects of these variables and their interactions with test anxiety were determined by multiple linear regression analysis. State anxiety was assessed at four points in the instructional and test sequence. The effects of distraction were not significant, though constructing responses led to higher achievement than reading the material. State anxiety was higher when overt responses were required. The findings suggest that decrements in achievement attributable to distraction are best interpreted in motivational terms.

Effect of Pictures on Acquisition of a Sight Vocabulary in Rural EMR Students

PAUL LUYBEN and BOBBY BROWN, Florida State University

The effects of pictures on the acquisition of a 45 word sight vocabulary in rural EMR students were studied in a two factor design (N = 24) with repeated measures on the second factor. Instructional materials were presented by computer-assisted instruction (CAI) in order to assess the feasibility of using CAI with EMR students. The effects of pictures significantly enhanced performance on a word recognition posttest of the stimulus items. Also, both groups achieved significant gains on the materials. The findings suggest that pictures assist the acquisition of a sight vocabulary and also support the use of CAI with this population.

Personality Characteristics and Performance in Computer-Assisted Instruction and Programmed Text

ALLAN N. BLITZ, and TIMOTHY SMITH,
University of Kentucky

A study was conducted in an attempt to determine whether personality characteristics are useful criteria on which to base aptitude-treatment-interaction (ATI) effects. Fifty-one dentistry students were randomly assigned to two groups and then took half of a course in oral pathology by computer-assisted instruction (CAI) and half by programmed text (PT). Their performance on a final examination was analyzed on the basis of their personality characteristics. Each student also participated in a structured interview. It was found that more deferent, orderly, nurturant and endurant students performed better through PT as compared to CAI and the more aggressive students performed better on CAI as compared to PT.

The Effects of the Availability of Prior Examples and Problems on the Learning of Rules in a Computer-Based Task

PAUL F. MERRILL, STANLEY J. KALISCH,
and NELSON J. TOWLE, Florida State University

Eighty-two Ss were randomly assigned to an availability-of-prior-examples group or a non-availability group. A significant difference between problem response latency means was obtained with the availability group taking less time to respond to the problem items. No significant differences were found between group means on posttest or display latency. A significant reasoning by treatment interaction on problem response latency was obtained with availability of prior examples reducing the demand for reasoning ability. Thus, availability of prior examples in this task seems to increase the efficiency of the rule problem solving process but does not increase its effectiveness.

Effect of Computer Tutorial Review Lessons on Exam Performance in Introductory College Physics

ORA M. KROMHOUT and DUNCAN N. HANSEN,
Florida State University

Computer tutorial review lessons for a one-quarter lecture course in introductory college physics have been developed and used by approximately 500 students, on a voluntary basis, over a period of several years. The investigation shows that the exam grades of students who used the computer materials is significantly higher (.01 level) than the class as a whole, if results from sections are pooled. Evidence is presented to show that this is not due to a factor of selection because of the voluntary basis for participation.

28.07 EDUCATIONAL SOCIOLOGY: TOOL FOR ACTION OR TOOL FOR THOUGHT (G, EXPERIMENTAL)

BERNARD SKLAR, University of California, Organizer

This experimental session in the format of a round table discussion will explore the controversy which surrounds the uses of sociology for social action or social policy formation. Available data indicate difficulty in obtaining what one might call a rational position on this general question. People tend to take sides for or against the direct use

of sociology to obtain social change. The format will permit both audience and speakers the greatest amount of time to define crucial terms, establish a common vocabulary and criteria for weighing the issues and counter issues presented. Divergent views will be presented by Charles E. Bidwell, University of Chicago, discussing "The Social Scientist and Public Policy: Keeping Scholarship Uppermost in an Age of Involvement," and Frank Besag, University of Wisconsin-Milwaukee, discussing "The Sociologist as Agent for Social Change." David A. Goslin, The Russell Sage Foundation, discusses the presentations.

28.09 AMERICAN INDIANS AND EDUCATIONAL PROGRAMS: PLURALISM OR DERACINATION. (G)

Culture Centers and Multi-Ethnic Education Media

B. ALAN KITE, University of Arizona

Multi-ethnic education occurs when administrators with dominant group cognitive orientations prepare curriculum materials for an audience with minority group cognitions. In order to develop appropriate media, educators must select audiovisuals that the audience recognizes symbolically. An international, yet spontaneous, elaboration of culture centers has developed in which minority group people preserve and utilize art forms considered expressive of their social identity. Center personnel have artistic insights, social statuses, and ethical awarenesses that can not be duplicated by administrators. By utilizing center services, the educator ensures the cultural integrity of media and concomitant improvement in his ethnic education program's reception.

Teacher Corps: Institutional Change or Maintaining the Status Quo

THOMAS S. POPKEWITZ, University of Wisconsin, Madison

An investigation of the structures of interpretations and institutional arrangements implemented in schools by the Wisconsin Indian Teacher Corps is described. An ethnographic approach was used to secure data, including participant observations and informal interviewing. Programmatic changes were linked to and legitimatized the school perception of Indian failure as related to a culture of poverty. Participation of Indians in the project's administration involved no policy formulation and was ritualistic. The program provided symbolic cues that reassured Indians while providing benefits to the schools and university. We need to reconsider the elevation of administrative procedures and its quasi-neutrality over substantive moral and political questions in seeking to alter conditions of poverty.

Role Stress among Indian Dormitory Aides

RICHARD L. WARREN, University of Kentucky

This paper examines role stress among Indian dormitory aides in a Bureau of Indian Affairs boarding school. While role stress for these aides may derive from a number of circumstances, this study concentrates primarily on task analysis and on stress as a function of the variation in the characteristics of the tasks aides perform. In general, the more mundane, menial tasks are assigned by the institution, and those tasks which are the occasion for (and the result of) meaningful, supportive interaction with students are developed by the aides.

28.11 CLOSURE ON OPENNESS IN EDUCATION (AERA)

JOEL WEISS, Ontario Institute for Studies in Education, Chairman

The four papers in this session describe a study of two dimensions of present day schools, openness of architecture and openness of program, and the associations that exist between these dimensions and selected student and teacher characteristics.

Ross E. Traub, in his paper, "Characteristics of Open Education," makes an analysis of the concept of open education in order to identify observable characteristics of openness in school programs. The result is a description of what openness means in terms of the way instructional objectives are set, the materials and activities used, the physical environment of the school, the structure that exists for decision making, the way time is scheduled, the type of instruction used, the composition of classes, the role of the teacher, the way students are evaluated, and the kind of student control found in the school.

D. Musella will discuss "The Dimensions of Schooling Questionnaire (DISC)." To assess the extent to which the program of a school embodies characteristics of open education, a questionnaire was designed for administration to teachers. The items in the questionnaire were based on the characteristics of open education that were derived from an analysis of the concept. Development of DISC and its format are described. Results from a validation study show that the instrument successfully discriminated between two exemplar schools, one with a very open program and one with a program that was not open. Reliability indices and results of a factor analysis of items in the questionnaire are also reported.

C. W. Fisher will present a paper entitled "Study Design and Procedure." The purpose of the study is to describe open education as it exists in elementary schools. In the first stage, thirty schools were classified into three architectural types. Openness of program in these schools was indexed by DISC after which the schools with most and least open programs, within each architectural type, were selected for the second stage of the study. In six selected schools information on input, process, and output variables was collected from principals, teachers, students, parents and administrative officers. Data from the second stage of the study, bearing on the validity of the selection procedure, are reported.

Joel Weiss will speak on "Openness and Student Outcomes: Some Results." Results are presented on associations found between openness of program and architecture and a diversity of cognitive and noncognitive student outcome measures. Preliminary analyses were made of the relationships between program and architecture with student and teacher background variables. Statistical analyses included multivariate analysis of covariance with mean contrasts for both program and architecture. Results will be related to input and process variables, as well as to past and future research efforts in open education.

28.12 AFFECTIVE LEARNING (C)

Reinforcement Conditions and Personality Characteristics: Aesthetic Judgment

CHARLES K. WEST, University of Illinois, Urbana,
WILLIAM M. STALLING, Georgia State University,
GRAEME WATTS, New South Wales Department of Education, Sydney, Australia

In an investigation of the modifiability of aesthetic judment, Ss were tested with the Internal-External Locus of Control Scale, the Test Anxiety Scale, and the Tolerance-Intolerance of Ambiguity Scale. Ss were later given the Meir Art Test (No. 1) under three counterbalanced knowledge of results conditions (KR): true, none, and false. A basic 3 x 3 analysis of variance design was used. There were significant differences between true versus false KR and high intolerant versus low intolerant (with high intolerant superior). There was also a significant interaction between intolerance and KR. The main effects and interactions of the other personality variables were insignificant.

Experimental Aesthetics: Some Simple Manipulations of Music

MARK I. CHESTER, Milwaukee Public Schools, Milwaukee, and FRANK H. FARLEY, University of Wisconsin, Madison

The experimental analysis of aesthetic response has been primarily concerned with the visual arts. The present research, however, reports a methodology and data on aesthetic preference for musical stimuli. Six unitary variations of a basic one minute folk guitar passage were developed and presented to Ss in a paired-comparison format. Preference frequencies were computed and passage rankings obtained. Highest preference in this sample was indicated for pitch and loudness variations, lowest preference for strum variations. Implications for aesthetic education and further research were outlined.

A Developmental Study of the Criteria Used by Children to Justify their Affective Response to Arts Experiences

DENNIS T. MURPHY, Economic Opportunity Council, Head Start

This study attempted to determine through content analysis of children's verbal responses to two arts experience, if there were developmental differences in their use of aesthetic criteria. A category system was derived from aesthetic criteria suggested by Harry Broudy. Children's responses to a live opera and to a reproduction of an oil painting were recorded and coded. Differences were found between the number of older and younger children using a particular aesthetic criterion. In general, older children tend to use a greater variety of critical criteria than younger children but this is dependent upon the type of art experience they are responding to.

The Effects of School Achievement on the Affective Traits of the Learner

EDWARD KIFER, University of Chicago

A quasi-longitudinal design was used to assess the impact of school achievement, sex and home rewards, and concern for achievement on the self-esteem and self-concept of ability of students. The results from a sample of fourth, fifth, sixth, and seventh graders indicated that there is a cumulative effect of successful academic achievement on student views of self and abilities. Sex differences and differences attributable to home rewards and concern were also found. The relationships were interpreted through a conceptual framework based on Robert White's theory of effectance motivation.

An Experimental Curriculum Designed to Modify Children's Sex Role Perceptions and Aspiration Levels

SELMA GREENBERG and LUCY PECK, Hofstra University

The first objective of the study, conducted with 150 three-, four-, and five-year-olds, was to ascertain whether young children assign occupational and social roles by sex. The results obtained through the use of two newly devised instruments were positive. Children do assign social and occupational roles by sex. The second objective was to determine if these role assignments could be modified. An experimental curriculum was devised for half of the sample, the other half forming the control group. The results indicate that children's assignment of social and occupational roles can become more egalitarian, hence are modifiable.

28.13 PROJECT PRIME (PROGRAMMED REENTRY INTO MAINSTREAM EDUCATION) (C)

Project PRIME: Programmed Re-entry into Mainstream Education

MARTIN J. KAUFMAN, U.S. Office of Education
MELVYN SEMMEL, Indiana University

The purpose of PRIME is to evaluate for whom and under what conditions integration of handicapped children into mainstream education is viable. The descriptive-correlational study followed an input-process-output model. Validated variables from past studies were selected and supplemented. Input variables included administrative, instructional, and attitudinal factors. Process variables included classroom observation of teacher-child behavior, cognitive demands, classroom climate, and pupil participation. Output variables included academic, social, and emotional measures. Analyses will center around single or multiple dependent and independent variables which describe and differentiate the educational life space of handicapped and normal children.

28.14 WITHIN COURSE: EVALUATION (B)

The Use of Course-Specific Questionnaires in Formative Evaluation

PATRICIA O'CONNOR, University of Michigan

To obtain from students information for formative evaluation of instruction, course-specific questionnaires were developed with individual faculty. Forms were introduced by a statement that the purpose of evaluation was to improve instruction. Although items varied with the course, all had potential action implications and all requested recommendations for change. Results supporting the effectiveness of course-specific evaluation are reported. Information derived instigated responsive faculty action. Several instructional research projects have been initiated. In both courses in which forms were administered during consecutive years, statistically significant improvement was shown for items related to changes introduced but not for other items.

Diagnosis and Remediation of Instructional Problems without the Use of Standardized Instruments

H. RICHARD SMOCK and TERENCE J. CROOKS, University of Illinois, Urbana-Champaign

Considerable research has gone into the development of student questionnaires for instructional evaluation. Somewhat less effort has been devoted to development of methods for diagnosis and remediation of instructional problems, but such methods are needed in any comprehensive instructional evaluation system. This paper will focus on diagnostic evaluation as a formative process, with discussion of the timing of evaluative procedures and the forms that these procedures could take. The analogues of the statistical concepts of validity and reliability in diagnostic evaluation will be examined. Examples of techniques found useful by instructors and evaluators working in this area will be presented.

A Method for Generating and Evaluating Course Goals

C. E. PASCAL and G. H. ROID, McGill University

In order to move away from reliance on a single questionnaire in university course evaluation and move towards a more formative evaluation, a method was developed for helping a team of instructors specify and evaluate their course and program goals. The method involves small group workshops in which instructors are asked to describe their program and state their objectives, in terms of student behavior. Discrimination training on clarity of objectives is provided. Written statements are then circulated to all instructors to test consensus. An application of the method to 30 instructors in a medical school department is discussed.

The Development and Use of a Goal Oriented Course Evaluation Instrument

DAVID D. STARKS, WAYNE K. DAVIS, University of Michigan, WILLIAM L. SCHMALGEMEIER, University of Nairobi

A course evaluation instrument (GOALS) was developed and used in three large introductory undergraduate courses. The purpose of the study was that of developing an instrument to obtain information from students regarding reactions to specified aspects of courses. These data are to be used by instructors to improve teaching. Instructors provided statements of course goals and selected techniques used in teaching and evaluation, and students reacted to these statements on a number of dimensions. Findings based upon estimates of reliability, factor analysis, and instructor profiles were presented. Suggestions were presented for the use of GOALS in diagnosing teaching problems.

28.16 ASSESSING THE TASKS OF PUBLIC EDUCATION (A)

Toward Definition and Measurement of Pupil Control Behavior

A. RAY HELSEL, Southern Illinois University
DONALD J. WILLOWER, Pennsylvania State University

Pupil control behavior is conceptualized as a continuum ranging from "custodialism," which views students as irresponsible and undisciplined needing strictness and punishment, to "humanism" which emphasizes a democratic atmosphere in which students are capable of self-discipline and treated accordingly. To measure pupil control behavior, a description questionnaire called the Pupil Control Behavior (PCB) Form was constructed. Data to test the instrument were gathered from 2,815 students representing PCB descriptions of 129 teachers. The final PCB Form consists of 20 items. Item scale *r*'s range from .68 to .93. The instrument effectively differentiates among subjects while clustering within descriptions of subjects. Cronbach's alpha reliability is .92. The PCB Form appears adequate on technical grounds to serve the purposes of further research.

Program Evaluation as an Administrative Concept

SARA M. STEELE, University of Wisconsin–Madison and University of Wisconsin–Extension

How do the various ideas currently used in conceptualizing and modeling evaluation relate to the administrator? How can he best use them in guiding his institution in evaluation? This paper summarizes some of the major trends of thought related to evaluation and explores them from an administrative rather than from a research or instructional point of view. It presents a framework and discusses some of the issues involved in program evaluation in educational institutions.

A Factor Analytic Investigation of the Task of Public Education

CHARLES D. DZIUBAN, TIMOTHY J. SULLIVAN and ARTHUR H. OLSON, Florida Technological University

This study was designed to assess the conceptual structure of the Task of Public Education Opinionnaire (T.P.E.). Since the development of the instrument, several psychometric techniques have been formulated. Two of those methods, image component and alpha factor analysis, were applied to the items of the T.P.E. after the correlation matrices were subjected to tests for psychometric adequacy. The results subsequent to orthogonal and oblique transformation identified three strong dimensions: (1) productive, (2) intellectual and (3) personal-social. It was recommended that additional items be added to the T.P.E. and that some of the personal and social valuables be combined. The conceptual structure of the instrument, however, was verified by the analysis.

28.17 TOWARDS A PROGRAMMATIC PRODUCTION SYSTEM FOR EDUCATIONAL ADMINISTRATION (A)

EMIL J. HALLER, Cornell University

This paper introduces the results of a collaborative research effort designed to improve the usefulness of doctoral dissertations to the field of educational administration. It presents an analysis of the doctoral dissertation as a knowledge product in educational administration. In addition, it presents a set of criteria against which programmatic knowledge production systems can be evaluated.

The Student's View

LAWRENCE A. KILEY, Cornell University

This study examines doctoral student perceptions of graduate research training in educational administration, and the student's perceptions of the dissertation research activity. Data was gathered by means of a questionnaire received from 259 doctoral candidates in the field who were attending 56 U. C. E. A. affiliated institutions. Important findings include: (1) majority of students are preparing to be practitioners of educational administration, (2) they have little research training during graduate studies, (3) they are at a disadvantage in conducting independent research to fulfill their dissertation requirement. It is time to question the traditional purposes of the dissertation, and consider alternative approaches to this activity.

The Professor's View

PARKER A. MOORE, Cornell University

The purpose of this study is to describe the professor's role in the dissertation process in educational administration. Questionnaires were sent to all professors of educational administration appearing on the most current UCEA institution membership list. The findings of this study indicate that more research interest is shown by the professoriate in educational administration than in previous studies. However, the professoriate does not seem to view the dissertation as an important means for contributing to the knowledge base in educational administration. A detailed examination of the present system is necessary before alternate models for dissertation production can be developed.

The Development of Alternate Models

PATRICIA N. BARBARESI, Cornell University

The purpose of this research was to develop alternative models of a dissertation production system in educational administration. Interviews were conducted with 40 research administrators in public and private research settings, e.g. Bell Laboratories and the National Cancer Institute. Based on information derived from interviews and appropriate readings, three preliminary models were developed and evaluative criteria were formulated. In addition, a 14 member panel was consulted. Each preliminary model was evaluated by the panel. On the basis of these evaluations, modifications of the models were made. If these models prove viable, a more effective means of carrying out the dissertation activity will be available.

28.18 THE GOVERNANCE OF HIGHER EDUCATION (A)

Departments: Problems and Alternatives

WILLIAM H. FARICY, Michigan State University

This paper deals with the existing inter- and intra-departmental phenomena. Current practices of forming departments and aggregating departments into colleges are investigated and are shown to have inherent difficulties which inhibit the performance of a university. These difficulties are illustrated with empirical data from a representative set of 42 major institutions with responses from faculty, administration, legislators, and board members. Two major types of alternatives are presented to the typical departmental organization: (1) replacing departments with functional organizations, and (2) adding other structures to the typical college that combine departments in terms of variables such as their resource utilization, staffing patterns, instructional missions, etc.

An Investigation of Department Heads at a State University

GERALD W. McLAUGHLIN, JR., JAMES R. MONTGOMERY and LESLIE F. MALPASS, Virginia Polytechnic Institute and State University

This paper focuses on the job of department head and the opinions of those holding this position in a state university. Forty-three department heads responded to a questionnaire involving departmental goals, job requirements, and job satisfaction. The results show that they are basically satisfied except for opportunities for Self-Development. They have duties which involve Departmental Leadership, Professional Visability, Resource Administration, and Liaison Acitivites. They tend to consider themselves as leaders in content specialties and primarily enjoy activities of program guidance and supportive development of faculty and students. Administrative duties are typically seen as unpleasant and time consuming.

Significant Relationships Between Types of Trustee Boards and Their Decision Patterns in Four-Year Colleges and Universities

JAMES GILBERT PALTRIDGE, JULIE HURST and ANTHONY W. MORGAN University of California, Berkeley

The role, functions and membership of lay governing boards for public colleges and universities are in a state of flux. In an effort to supplement previous perception oriented research, a document analysis of board minutes, by-laws and rules and regulations was made for the academic years 1963-64 and 1971-72 to determine what decisions boards actually do make and what are the *de jure* and *de facto* areas of the board's authority. Decision pattern profiles were developed for each of the 22 boards selected and comparisons made by such variables as method of board selection, traditional versus nontraditional membership, and the presence of ex officio members.

28.26 LEARNING IN THE YOUNG CHILD (C)

Longitudinal Kindergarten-First Grade Perceptual Study

HELEN SHANER SCHEVILL, Institute of Medical Sciences, San Francisco, California

This report investigates perceptual functioning in the kindergarten-first-grade period for slow- and average-maturing children. Two sets of auditory and visual tasks were devised: (1) identifying the first of an ordered pair of lights or tones when speed of presentation was a factor, and (2) categorizing each stimulus signal either by a uni- or dual response. Consistent patterns of behavior were found for each group of children when reading readiness scores, grade level, and sensory modality were the crucial variables. Deficiencies in auditory, but not visual, perceptual encoding were found in slow learners' first-grade performance.

Training Imagery Production in Young Children Through Motor Involvement

WILLIAM H. VARLEY, JOEL R. LEVIN, ROGER A. SEVERSON, and PETER WOLFF, University of Wisconsin, Madison

Kindergarten and first-grade children were given a paired-associate learning task following one of five types of strategy-training procedures. In the motor-training conditions, Ss generated interactions involving pairs of toys by playing with them or by drawing pictures of them. It was found that relative to simple imagery practice (but with no play or drawing), motor training facilitated the performance of kindergartners, with no differences among motor-training variations. In the first-grade, imagery practice by itself was as effective as each of the motor-training procedures.

Teacher Behavior and Student Achievement in the Bereiter-Engelmann Follow-Through Program

MARTIN A. SIEGEL and BARAK ROSENSHINE, University of Illinois at Urbana-Champaign

The purpose of this study was to determine the relationship between teacher behavior and student achievement in the B-E program. Ten groups were observed in the first study, 24 groups in the second. All teachers were rated on four occasions using a highly specific rating scale. The pre- and post-measures were criterion-referenced. Four variables remained in predictive importance across studies: following the format, requiring 100% criterion responding, correcting mistakes, and presenting signals. Since the most critical variables affecting student gains may be those which are not included in general observational instruments, development of instruments specific to a curriculum program seems useful.

Compensatory Prekindergarteners' IQ Gain Correlated with Third Grade Reading Achievement

PHILIP ARCHER, Wake Forest University, and MICHAEL SEWALL, Mohawk Valley Community College

The purpose of this study was to investigate the correlation between gain on the Stanford-Binet Intelligence Test (S-B) in compensatory prekindergarten programs, and scores on the New York State Pupil Evaluation Program (PEP), Reading Section, over three years later. Four hundred and five subjects showed a correlation of 0.42 for the pre-post S-B gain correlated with PEP, when corrected for regression, versus 0.13 for uncorrected S-B gain. Additional correlations were computed for restricted IQ ranges. This study lends support to compensatory education programs attempting to raise IQ's.

Exploration and Learning-to-Learn in Disadvantaged Preschoolers

STANLEY H. RUDE and RICHARD T. WALLS, West Virginia University

The study assessed contributions of different novelty pairings and reward types across three successive discrimination learning problems in a 3x2x3 mixed design. After learning a simple two choice discrimination problem, Headstart subjects responded to six double reward trials and six extinction trials. A learning-to-learn effect with regard to both problem solution and decision time was evidenced. The learning set did

not, however, effect specific exploration in double reward and extinction trials. Epistemic curiosity was evident across problems to the extent that children would explore a novel object even after learning that the familiar one was associated with reward, regardless of reward type.

29.06 COMPUTER-ASSISTED INSTRUCTION: II (C)

On Branching and Paths in CAI Lessons

BRUCE L. HICKS and DAVID V. MELLER, University of Illinois, Urbana-Champaign

Concise graphical representations of branching and paths are needed for the rational design of CAI lessons. In developing such a representation, we first review a few of the fundamental concepts of digraph theory and of the Hicks-Hunka branching diagram. Discussion of the essential characteristics of a CAI lesson then leads to a representation of branching structure and student paths on the branching diagram together with partial representations of other lesson characteristics. This representation is particularly well suited to producing displays of structure and paths on the video screen of a CAI terminal. We discuss the problems of producing displays that are highly adaptable to the user's needs and indicate which of these problem have been solved by a program written for the PLATO III CAI system.

Adaptation within a CAI Program on Basic Arithmetic Skills

SUSAN S. TAYLOR and DUNCAN N. HANSEN, Florida State University

An adaptive CAI program about fractions was designed to minimize student time spent while insuring that each objective was mastered. The materials were presented to over 500 eighth-grade students whose time in the program ranged from a minimum of 25 minutes to over 24 hours. In addition to describing student performance, the data were analyzed to determine the best predictors of performance and to study the learning pathways students followed. A critical evaluation of the strategies employed in such programs is essential to establishing models for the design of adaptive instructional material in the future.

Objectives, Sequence, and Aptitude Treatment Interactions in CAI

PHILIPPE C. DUCHASTEL and SIGMUND TOBIAS, Florida State University

The primary purpose of this study was to investigate one hypothesized role of providing students with behavioral objectives, i.e., that objectives will help the student to better structure the learning materials and therefore facilitate learning. A 2 x 2 design involved the following categories: availability of objectives versus no objectives and a logical versus a random sequence of CAI frames. The hypothesis that objectives would increase performance only for those subjects receiving the random sequence was not supported for either of the dependent measures. However, a strong main effect for sequence was revealed. Interactions with scholastic ability were also investigated.

Response Latency as a Correlate of Individual Differences in Retention

WILSON A. JUDD, University of Texas,
ROBERT GLASER, University of Pittsburgh, and
DANIEL J. A. ROSENTHAL, University of Pittsburgh

Learning rate and response latency measures obtained during acquisition and overlearning on a paired-associate task were examined as a function of subsequent retention. Good retainers were found to require fewer learning trials and have longer latencies than poor retainers during both acquisition and overlearning. During overlearning, the usual reduction in latency was found for both groups, but the rate of reduction in latency was more rapid for the good retainers. These results are discussed in terms of possible individual differences in learning strategies and in terms of application to instructional decisions in computer-assisted instruction.

Effects of Learner Control on Performance and State Anxiety in a Computerized Concept Learning Task

RICHARD R. COLLIER, LEE POYNER, and
HAROLD F. O'NEILL, JR., WILSON A. JUDD,
University of Texas

This study is a demonstraton of a promising research paradigm for the investigation of the effects of learner control in Computer-Assisted Instruction on precisely defined affective variables and on learning performance. The paradigm involves the use of well controlled, generalizable, laboratory experiments in which independent variables placed under learner control result from a task analysis of the learning materials. It was found that learner control reduced state anxiety while resulting in performance increments. It was also indicated that some students would benefit from instruction on how to use learner control options.

Inequality Aversion and Optimization of Student Achievement under Computer-Assisted Instruction Used as Compensatory Education

J. D. FLETCHER and D. T. JAMISON,
Stanford University

Two computer-assisted instruction curricula, one in elementary mathematics and one in initial reading, are evaluated as compensatory education. Compensatory education is intended to increase students' achievement over what it would have been without the compensatory education and to make the spread of achievement equitable. The two curricula are shown to achieve these two purposes. A realistic procedure of optimizing instruction might begin with careful explication of the distribution of desired post-treatment achievement.

29.11 STUDENT ATTITUDES AND VALUES (C)

School-Related Attitudes of Urban Junior High Students

DOUGLAS R. MILLER, Miami University

This study investigated the school-related attitudes of 160 junior high students in an urban school. The primary methodological principle was to avoid false responses, so the survey was kept short and was given by a Black, perceived as "friendly" by the students, 80% of whom were Black, and 20% White Appalachian. Factor analysis of the data generated eight interpretable factors: (1) teacher/classroom attitude, (2) boredom, (3) education valued, (4) persecution, (5) family structure, (6) grade in school, (7) learn for fun, (8) non-academic goal. The major conclusion was that boredom and school as a valued goal co-exist.

Student Attitudes toward Sex-typing Practices in High School

MARY J. GANDER, University of Wisconsin, and
A. J. H. GAITE, University of Oregon

A 46-item questionnaire was given to four groups of high school students (sophomore males, females; senior males, females; n = 100). Students responded on a four point Likert scale. An attitude score for each group was obtained and a two-way analysis of variance with fixed

effects was performed to determine any significant sex, age, or interaction effects; sex differences were significant ($p < .01$). Further analysis (one-tailed t-test on "strongly agree" and "strongly disagree" data tabulated for each S) showed female S had significantly stronger attitudes about sex-typing than males ($p < .01$). The implications of the results are discussed.

Purposes, Processes and Consequences of Three Spaced 1-Unit Seminars on the Nature and Meaning of Values

MAURICE E. TROYER, Syracuse University,
YASUYUKI OWADA, Johnston College (Redlands),
KAZUO HARA, International Christian University (Japan),
TAKASHI FUJIMOTO, Hokkaido University (Japan), and
KEIJI FUJITA, National Institute of Educational Research (Japan)

In order to provide the opportunity, individually and collectively, to identify their values, to examine them against formulated ideologies and to clarify them in group discussion, International Christian University (Japan) first term freshmen, third term sophomores, and second term seniors took 1-unit seminars in the Nature and Meaning of Values. Thirteen Secular Ways (of Living), six Politico-Economic Ways and nine Religious-Ethical Ways were rated, then ranked. Graphed responses provided profiles of each student's values. Freshmen responses revealed 21 significant intercorrelations between the 28 Ways; Sophomores, 49; Seniors, 66. Increased interrelation and decompartmentalization of values is evident. Some hazards were discovered.

Measuring Work Values of Elementary School Children

BRADFORD FENNER, and LOYDE W. HALES,
Ohio University

There is a need for a work values inventory which can be used with preadolescents. The purpose of this study was to investigate the factor structure of a work values instrument which can be used with elementary school pupils. A principal components analysis with verimax orthogonal rotation was performed on protocals collected from 1956 fifth, sixth-, seventh- and eighth-grade pupils. Eleven factors were found, with each factor corresponding to one of the scales on the instrument. All items of a scale had a primary loading on the same factor. Evidence for the construct validity of the instrument was found.

A Study of College Students' Preferences for Various Kinds of Information about Educational Innovation

RONALD P. CURCIO, University of New Hampshire, and
WILLIAM B. GILLOOLY, Rutgers University

Three hundred education and non-education majors completed a questionnaire that required their selecting which of seven kinds of information about an educational innovation they would find most influential in determining whether or not to adopt it. Analysis of the data revealed that all Ss considered personal experience with the innovation as the most important factor. Logical considerations also received a sizeable number of first-place choices. The results of the student sample differed significantly from data of previous studies of university faculty and public school teachers. The implications for those who teach educational psychology courses or change educational practice is discussed.

29.12 CHILDREN'S COMPREHENSION OF TEXT (C)

The Effects of Question Position and Relevancy of Questions to Criterion Test on Learning Social Science Material by Fifth-Grade Pupils

MARY MULVANEY, Jersey City State College, and
PHIL L. NACKE, University of Kentucky

The effects of the position of interspersed questions (before and after related discourse) and the relevancy of the questions (criterion test relevant and criterion test irrelevant) on learning social science material by fifth-grade pupils was assessed. Using two special control groups, it was found that a significant amount of information was gained by reading both when questions were interspersed and when no questions were provided. Interspersed questions facilitated both incidental and direct learning. The questions-after condition was observed to be superior to questions-before. The results of this investigation tend to be consistent with earlier studies conducted with older subjects.

A Study of Text Processing and Intrinsic Individual Differences in Conceptual Organization

DONALD S. CAMPBELL, Queen's University, Ontario, and
GARY D. BORICH, University of Texas

The purpose of this study was to observe effects of adjunct aids on individual differences in productive learning from text. Prose passages were constructed containing hierarchical patterns characterized by superordinate, coordinate, and associative relationships. Treatments were defined by type of cue question following each passage. Questions cued Ss toward either superordinate, coordinate, associative or "filler" (control) relationships from which inferences were S-generated. Following treatments, Ss were given tests of recognition and recall. No effects for T's were observed. Effects for aptitude and A x T's were found, thus accounting for variance in performance due to individual differences and providing implications for using differentiated treatments in developing instructional materials.

Word Arousal Effects in Adolescents' Learning from Discourse

ANTHONY L. TRUOG, University of Wisconsin, Whitewater, and
FRANK H. FARLEY, University of Wisconsin, Madison

The present study extended the research on the learning effects of words varying in arousal properties inserted into prose. It has been demonstrated that word arousal value influences passage comprehension as well as specific word recall. No study has examined recall of the arousal words themselves, however, Two hundred forty-eight grade seven, eight and nine students served as Ss in a 2 x 3 design: two retention intervals, and three arousal categories–high positive, high negative, and low. Recall was measured by a cloze technique. Extralist errors were greatest in the high arousal (positive) condition. No interaction of arousal category and retention interval was found.

Cognitive Strategies in Children's Comprehension of Text

PATRICIA DIVINE-HAWKINS, JOEL R. LEVIN, and
PETER WOLFF, Wisconsin Research and Development
Center for Cognitive Learning

Two experiments are reported in which the effectiveness of a visual imagery strategy is compared for children's reading and listening comprehension. In Experiment I, the concreteness of the passage was manipulated. In Experiment II, the presentation rate of the passage was varied. The results suggest that the production of visual images by the child facilitates the comprehension of concrete materials, and that similar processes may underlie reading and listening comprehension. Implications of the research are indicated, along with suggested extensions to the investigation of possible cognitive strategies involved in the comprehension of abstract materials.

29.13 RITALIN AND THE SCHOOLS (C, SYMPOSIUM)

JAMES S. BOSCO and STANLEY S. ROBIN,
Western Michigan University, Organizers

Learning and behavior problems have long been with schools. In recent years, developments in pharmacology have provided chemical methods to deal with such problems. Although various drugs have been used, Ritalin (Methylphenidate hydrochloride) is one of the most frequently prescribed drugs for treating hyperkinesis or minimal brain damage. These conditions frequently result in behavior which is considered dysfunctional in schools. The use of Ritalin has, in some instances, caused controversy, and debate has been conducted within popular journals, the media, Congress, and in scholarly journals. Questions concerning the effectiveness of the drug; the roles and practices of the physician, teachers, and other school specialists; and the ethics of behavior modification through drugs have been raised. The purpose of this symposium is to consider and present research about these questions, in addition to their ancillary issues, from the perspectives of an educator, a sociologist, a physician, and a school system administrator.

"Is Ritalin Effective: A Summary of Research" will be presented by James Bosco, Western Michigan University. Although the use of Ritalin for treating the hyperkinetic syndrome raises many questions, one of the most fundamental is the effectiveness of the drug. A number of studies have been reported which test the effectiveness of the drug using measures of achievement, aptitude, and behavior as dependent variables. This paper will synthesize the literature. Characteristics of the design, types of tests, and procedures will be discussed as well as the findings of the studies. A description of some of the recurrent weaknesses in these studies will be included.

Stanley S. Robin and James Bosco, Western Michigan University, will discuss "Attitudes, Beliefs and Practices: Paths and Obstacles to Ritalin Usage." A series of studies in an urban public school system and medical community (Grand Rapids, Michigan) was conducted to determine teachers', parents', pediatricians' and childrens' views of the use of Ritalin for school children. Several specific questions were asked: What contact with and information about Ritalin do these groups have? What attitudes do they express toward Ritalin? What professional behaviors do teachers and pediatricians report in regard to Ritalin? Emphasis in analysis and interpretation is placed upon the paths to Ritalin programs for school children as developed among these groups. Emphasis is also placed upon the interface, convergences and differences among these groups in attitudes, beliefs and practices. Policy recommendations derived from these researches will be presented.

Edward Birch, Grand Rapids Public Schools, will speak on "Ritalin as Problem and Solution: The Perspective of the School Administrator." The increasing use of Ritalin and other behavior modifying drugs in the treatment of children with behavior disorders confronts educators with unique problems. The focus of the paper is a discussion of the particular problems involving teachers and administrators relating to the use of behavior modifying drugs. Issues center around the role of the educator as he relates to parents and the medical profession, the ethical and legal responsibilities of school personnel, and the need for a procedure model delineating the appropriate role for parents, the school, and the medical profession in the use of behavior modifying drugs with school children.

29.14 HUMANISM AND ACCOUNTABILITY: IS MARRIAGE POSSIBLE? (B, SYMPOSIUM)

WILLIAM W. PURKEY, University of Florida, Organizer

No one in his right mind can really oppose the idea of accountability. Every institution must be held accountable and schools are no exception. It is possible, however, that the means we choose to achieve accountability may boomerang to destroy or impede the goals we seek. Just as the production of a truly healthy person requires a balanced diet, so, too, the approaches we take to accountability must provide a balanced perspective for improving the health of education. Too much, even of a good thing, can destroy prime objectives. We cannot afford to let a preoccupation with one or another system distort our overall goals.

Currently we are pouring vast sums of money and the time and energies of thousands of persons into the behavioral objectives performance criteria for accountability. These approaches are not wrong, but, alone, they are not enough! A truly comprehensive approach to accountability must take into consideration all factors affecting the outcomes of schooling, using each for what it can contribute to the total picture with full recognition that all are related and all are required. Among these factors are cognitive, affective and humanistic objectives like intelligent problem solving, responsibility, positive views of self, concern for other people, openness to experience and the development of personal philosophies and values leading to effective citizenship and full personal lives. To achieve these ends it is imperative that educators: (1) treat such objectives as matters of prime importance, and (2) earnestly seek for appropriate means to measure and evaluate them.

This symposium will present three different views of this problem by prominent educators who have been involved in various aspects of the debate over accountability. It is intended to stimulate thought concerning the overall problem and to pinpoint the critical areas of concern to the humanist. Participants will have an opportunity to identify the nature of the problem and suggest possible solutions to it.

Arthur W. Combs, University of Florida, is one of the founders of Perceptual Psychology and widely known as researcher, writer and consultant on humanistic education. His bibliography includes over 100 publications. He has served as speaker or consultant in every state in the nation and in four foreign countries. He has been president of four state and national professional organizations. The numerous honors and awards he has received include the John Dewey Society Award, Distinguished Service Award, New York State Psychological Association, and University of Florida Teacher-Scholar of the Year Award. His paper is entitled "The Problem of Accountability from a Humanistic Perspective."

Dr. Combs believes that there are valid alternatives to the behavioral objectives approach to accountability. In his recent publication, Educational Accountability: Beyond Behavioral Objectives, he remarks that "The plea of the humanist for education is not that we give up behavioral approaches, but that we realistically recognize their assets and liabilities and thereafter, use them in proper balance with the humanistic aspects of the problem."

Jack Frymier of Ohio State University is president of the Association for Supervision and Curriculum Development and President-elect of the newly formed Alliance of Associations for the Advancement of Education. He is author of several books and articles on Curriculum and motivation that are significant contributions to education. He is widely known as speaker and consultant on educational problems. He will present a paper entitled "Who is Accountable to Whom and for What?

Dr. Frymier is concerned about what happens to people in the educational process, and he feels that schools too often operate as factories processing their products on an impersonal assembly line. He sees educators as experts who can help learners learn, but who cannot do the learning for them, efficiently or not.

Shelley S. Boone, Deputy Commissioner of Education, Florida State Department of Education, has been deeply involved in efforts to make the schools of Florida accountable. This state is leading the nation in accountability, and much of the credit goes to Dr. Boone for his work with administrators, staff experts and legislators. Together they have put together one of the first statewide systems of accountability. His paper will be "Accountability: Planning for Action."

Through his many years of experience in this field, Dr. Boone has sensed the need which laymen, public officials and professional educators alike are now voicing with increasing frequency: the need to find out what the schools are accomplishing in fact, and the need to report that information to the public which pays the bills. He believes that it is essential that we do these things in order to plan intelligently for the future.

No question is more timely today than the question of educational accountability. The public is aroused by reports of mass educational failure, and lawmakers vow to pour no more money down the educational rat hole until evidence is presented to indicate that children are benefiting from it.

At the same time, our schools are being criticized for their "mutilation of spontaneity, of joy in learning, of pleasure in creating, of sense of self," in Charles Silberman's words, and we must be careful not to further this mutilation in the name of accountability. Indeed, educators must be held accountable for the emotional learnings of their students as well as the intellectual learnings. If accountability, in the long run, brings about a higher level of achievement in reading and math, but does nothing to further a positive sense of self on the part of the student, very little will have been gained. If in the process of raising the reading rate learners become more alienated to the learning process, the net result will be a severe setback to the cause of universal education.

Educators themselves must become involved in the accountability movement, and not leave the initiative to laymen and legislators. They must be aware of the humanistic side of the question and avoid creating a lopsided system which either does nothing about the humanistic concerns, or worse, actively works against those concerns.

29.15 CLASSROOM OBSERVATION (C)

Classroom Observation Scales

EDMUND T. EMMER, University of Texas

Nine scales were developed to measure a series of classroom behavior variables derived from a factor analytic study of five observation systems. The scales are multi-point check lists which are behaviorally referenced by different amounts and types of classroom behaviors. The scales measure such aspects of classroom behavior as teacher initiated problem solving, negative and positive affect, and pupil-to-pupil interaction. Data are given for between observer agreement and for stability. The scales may be useful for helping preservice teachers to observe a number of aspects of classroom behavior and for assessment and feedback in teacher training programs.

Observer Effect on Teacher Use of Token Reinforcement

KAREN F. SWOOPE and HOWARD E. SATTLER,
Arizona State University

Data were collected on rate per minute of administering token reinforcement for one male and seven female teachers enrolled in a behavior modification seminar. In the observer-present condition, data were obtained during 15-minute classroom observation periods, and in the observer-absent condition from token record cards maintained by pupils. Comparison of observer-present observer-absent reinforcement rates indicated significantly higher rates of token delivery ($p < .01$) in the observer-present condition. The observer effect has serious implications for those programs whose assessment procedures introduce an observer into the classroom to collect data on changes in targeted teacher behavior.

Frequency and Types of Teacher Reinforcement Given to Lower and Middle Class Students

HARVEY FRIEDMAN, Pennsylvania State University, and
PHILIP FRIEDMAN, Northwestern University

Schedules of teacher reinforcement for lower and middle class white students were recorded with a systematic observational technique (Teacher Reinforcement Schedule). Tabulations were made by 12 observers within 24 fifth- and sixth-grade classes. Significantly more total reinforcements were given to middle than to lower class children. This difference mainly resulted from between group variation on three of the six Teacher Reinforcement Schedule scales (Tangible Rewards, Attending, Feedback). By combining categories, it was also shown that middle class students received significantly more nonverbal reinforcements than lower class students. However, a reliable difference in frequency of verbal reinforcement was not observed.

Teacher Styles in Questioning and Explaining

CAROL ANN MOORE, Stanford University

The purpose of this study was to investigate differences in teachers' patterns of questioning and explaining (teaching style), and to explore relationships between teaching style and other teacher characteristics. In order to study teaching styles in a standardized setting, a teaching game which simulates a one-to-one teaching situation has been developed. Individual profiles and frequency distributions across teachers show large differences on many teaching variables. Additional analyses are being performed to group teachers into style groups, to test the effect of student characteristics on teaching behavior, and to explore relationships between teacher characteristics and teaching styles.

A Procedure for Recording Sequential Patterns of Social Interaction in the Classroom

INA FITZHENRY-COOR, JILL S. WEINBERGER, and
DAVID BUCKHOLDT, CEMREL, Inc.

A classroom observation procedure for recording and quantifying complex, sequential interactions between subject and teacher or peers has been developed. Two instruments, used in tandem, test hypotheses concerning the consistency of the subject's interactions. The Sequential Record, utilizing observations notes, is analyzed for repetitious patterns of social behaviors. These patterns are tested quantitatively over time-series observations with the Interaction Recording Sheet, a tabular format containing 35 categories of student or teacher/peer behaviors. Categories are marked continuously and in sequence throughout the observational period; specific patterns of three to six points of interaction are drawn from the data and quantified.

29.21 SATELLITE ACADEMIES PROGRAM (A, SYMPOSIUM)

YING C. CHUANG, Center for Urban Education,
New York, Organizer

The symposium of the Satellite Academies Program has four basic objectives: (1) to inform colleagues in the field about an attempt by a major city to institute structural reform in education through the development of alternative schools; (2) to describe an educational program which utilizes resources of large scale public agencies outside the school system, private enterprise, and resources within the Board of Education; (3) to have educational researchers deal with some of the problems of inner-city education; and (4) to provide an analysis of the Satellite Academies Program in terms of the U. S. Office of Education's Model II Employer-Based Career Education, and its application to future developments in the area of Career Education.

Arthur Humphrey, Jr., Chase Manhattan Bank, will speak on "Satellite Academies: The Employer Sector." Mr. Humphrey will discuss the development of the program from the employer's point of view. He will describe his own participation in the program as Deputy Director in charge of school-employer liaison. He will discuss what employers look for in educational programs, the market and the recruitment of jobs, hiring criteria, job supervision of students, and employer involvement in curriculum development. He will also focus on

the relationship between the school and the employer, and the problems and advantages involved in such a relationship. In addition, he will point out considerations to be taken when involving employers in an educational enterprise.

In his presentation, "Satellite Academies: The School Sector," John Strand, the program's Director, will discuss the schooling aspects of the program in terms of its goals and objectives, procedures and operation. He will also include in his discussion a section on the problems of developing alternative structures in an urban context. He will mention those considerations to be taken when developing alternative educational programs.

Ralph Larkin, Center for Urban Education, in his "Satellite Academies: Evaluation of the First Year," will describe the evaluation of the operation of the program in terms of the five basic program components: (1) program management, (2) instructional personnel, (3) pupil personnel services, (4) pupil personnel, and (5) curriculum. For each section, a brief overview of the development of each program component will be given, focusing on accomplishments and problems in each area. He will conclude with a discussion of considerations for evaluating innovative programs.

In "Satellite Academies and Employer-Based Career Education," Ying Chuang of the Center for Urban Education will discuss the Satellite Academies program in terms of its similarities and differences with Model II–Employer-Based Career Education. He will emphasize such issues as comprehensiveness, pupil personnel, governance systems, program goals, roles of the employer, and pupil payment. He will provide a prospectus of the future of the Satellite Academies Program as it moves toward a more comprehensive employer-based career education program in the coming years.

The scientific importance of this symposium is concerned with planning and evaluation methodology. The educational importance of the symposium evolves around two concerns which have been interwoven in the Satellite Academies Program: alternative schools and career education. The Satellite Academies Program is one of the earliest attempts at the development of an alternative school by a major city school district. Since it involves the cooperation of three large city agencies, the City Planning Commission, Human Resources Administration, and the Board of Education, as well as employers from both public and private sectors, the program is unique in its structure, and may well point the way for future projects in urban areas which, through sheer necessity, need to develop relationships between large scale urban bureaucracies. It is a case study in inter-agency cooperation for educational purposes, and the lessons learned should be of importance to any administrator in an urban environment who is planning to create alternative schools.

There is also the issue of career education. Satellite Academies Program is the only program in the United States which approximates employer-based career education. The U. S. Office of Education has shown more interest in career education recently. Three models of career education have been developed: Model I–School-based, Model II–Employer-based, and Model III–Home-based. At present, no student in the country is enrolled in an employer-based educational program. However, Satellite Academies comes closer than any other extant program. Because of its closeness to Model II, it should be of importance to persons interested in career education.

29.22 RESEARCH METHODOLOGY II (D)

A Challenge to the Need for High Survey Response Rates

LARRY L. LESLIE, The Pennsylvania State University

The credibility of survey research findings is, at present, largely a function of response rate. Low return rates are presumed to suggest biases in data. This paper demonstrates that when surveys are made of homogeneous populations concerning their attitudes, opinions, perspectives, etc., toward issues concerning the group, significant response rate bias is probably unlikely. Although at first glance these survey conditions may seem rather unique, most surveys in the social sciences are probably precisely of this sort. Most are probably of homogeneous populations on matters obviously concerning them.

Analysis of Polychotomous Response Variates

MARYELLEN McSWEENEY, and WILLIAM H. SCHMIDT,
Michigan State University

This study develops and extends quantal response techniques to polychotomous data exhibiting developmental or learning characteristics. The relative incidence of levels of the criterion is expressed as a function of the quantitative predictor. Maximum likelihood is used to estimate parameters of the function and the asymptotic variances. Goodness-of-fit of the compound logistic distribution to the data is tested. A developmental model is constructed and applied to analyze the incidence of aggression as a function of age. An unordered model is used to analyze incidence of modal clustering in recall data as a function of instructional-unit completion rate.

An Investigation of Domain Specific Aspects of Locus of Control

ROBERT H. BRADLEY and JOHN P. GAA,
University of North Carolina

Two measures of locus of control, the Intellectual Achievement Responsibility questionnaire (IAR) and the Locus of Control Inventory for Three Achievement Domains (LOCITAD), were administered to students participating in a motivational study designed to influence academic achievement, attitude, and locus of control. The analysis of the data supported Crandall's contention that locus of control is domain specific as opposed to a generalized construct. However, his earlier findings that acceptance of responsibility for success and acceptance of responsibility for failure are minimally correlated were not supported. The findings also support the validity of the LOCITAD as a domain specific (Intellectual, Social, and Physical) measure of locus of control.

A Comparison of Human and Computer Grading of Essay Content

DONALD R. MARCOTTE, Wayne State University and
JACK H. HILLER, Southern Illinois University

Several computer procedures for scoring the content of history examinations were compared against the criterion of human grades. Twelve essay topics answered by 80 students for course credit provided the score material. The computer procedures generated scores which agreed better with each of the judges than the judges agreed with each other. The most effective procedure based its scoring on the co-occurrence of key terms in sentences rather than on the isolated occurrence of terms.

A Scheme for Test Analysis Using FORTRAN

MARY E. KOETHER and ESTHER U. COKE,
Bell Telephone Laboratories

Using string-manipulation algorithms, FORTRAN computer programs were designed for analysis of written material. The programs measure length of a text and its complexity in terms of the average length of words and sentences, map the occurrences of keywords or phrases, calculate word frequency distribution and certain indicators of style. Trials of the programs, in studies of readability and reading rate, in aiding editors, in grading essays, and in identifying sources of response bias in multiple choice tests, demonstrate the potential applications of these algorithms in educational research and the

usefulness of augmenting FORTRAN's computational facilities with character-processing capability.

29.23 BIG CITY EDUCATIONAL GOVERNANCE: THE METROPOLITAN TORONTO TWO-TIERED EXPERIMENT (A, SYMPOSIUM)

Concern over the purpose and direction of large city systems has reached crisis proportions. The governance system has been singled out by critics as non-adaptive, over-centralized and dysfunctional. One structural response to the negative charges is the two-tiered organization. Since the introduction of this arrangement in Toronto two decades ago, many urban areas have adopted the principles of governance suggested by this organization. This symposium is a report on the oldest and most institutionalized model of two-tiered policy making. As a result of an intensive, two year study, information will be presented upon such topics as the effect of structure upon policy making, the viability of local autonomy, and the function of administrative and political (Board) decision systems in Metro Toronto.

"The Metro Toronto Study—An Overview of Research Strategies and Findings" will be presented by Thomas R. Williams of the Ontario Institute for Studies in Education and David K. Wiles of the Virginia Polytechnic Institute and State University. An overview of the study's purposes, both those of a research and those of a developmental nature, will be given. The research strategy followed and the guiding analytical framework which has been employed will be outlined. Under this research strategy section, a discussion of the problems of system access and means for achieving it is presented.

An overview of the major findings of the study for the first year of the project is given. The findings reported are of two types. First, major substantive findings concerning the operation of the two-tier governance structure of Metro Toronto are reported. Second, findings of a methodological nature are reviewed and their implications for the remainder of the study described.

The final section of the paper reports on developmental aspects of the project to date and outlines project plans which remain to be completed.

"Administrative Linkages in a Two-Tiered Governance System," presented by D. K. Wiles (Virginia Polytechnic Institute and State University) and T. R. Williams (Ontario Institute for Studies in Education) is a study of administrative linkage mechanisms between the two tiers of educational governance. It is a functional analysis of professional structural arrangements and the making of policy in a number of decision areas. Special emphasis is placed upon the distribution of scarce resources among local jurisdictions, the function of the metro tier staff, similarities and differences in decision "style" in various policy arenas, and the relationship of the foremost professional system (Council of Directors) to other administrative linkage mechanisms. The functional necessity of linkage mechanisms in a two-tiered governance structure and the applicability of the Toronto System to other city systems is explored.

"The Status of Local Autonomy in Metro Toronto Education" by Harvey Nightingale, (Ontario Institute of Studies in Education) and D. K. Wiles (Virginia Polytechnic Institute and State University) is a study of the type and extent of decentralization afforded by the two-tiered governance system. Budget and curriculum policy making were analyzed for an operational definition of the legislated mandate of local autonomy within the Toronto system. The professional and political systems of each local jurisdiction within the two-tiered structure were compared for similarities and differences in style of operation. Implications about decentralization in the structural, functional and psychological sense were hypothesized for large city school systems based upon the Toronto model.

S. B. Lawton and Arlene Wortsman, Ontario Institute for Studies in Education, will present a paper entitled "School Board Voting Behaviour within the Metro Toronto Structure." The federated two-tier system of educational governance purports to ensure a high degree of local autonomy and to allow the reflection of local values in specific local educational policies. Analyses of the voting behaviour of the six area boards of education in Metro Toronto were conducted using the technique of roll call vote analysis in order to study the degree to which the goal was being manifested. The authors will report upon: (1) the values which underlie voting cleavages within each of the area boards, and those cleavages which serve to distinguish boards from each other; (2) the types of issues which are viewed with virtual unanimity throughout Metro; and (3) the strength of political party affiliation as a predictor of school board member voting behaviour. A final section of the paper will analyze the voting behaviour of school board members who serve on both the local and Metro boards of education for consistency.

Thomas R. Williams and Judy Teichman, Ontario Institute for Studies in Education, will report upon "School Board Electoral Politics in Metropolitan Toronto," in an effort to contribute to a fuller understanding of the political culture of Metropolitan Toronto, particularly to the support dimension. They will describe: (1) a study of electoral politics as manifest in school board elections in the period 1953-1972 in the six boroughs, and (2) an in depth case study of the most recent election. These two studies allow several important comparisons to be made. For instance, they allow comparison by regional school board level and by ward along several variables such as educational expenditures, S.E.S. variables, and ethnicity. At the same time, conclusions are drawn concerning the impact of incumbency upon re-election. The role of the media, the party structure and other interest groups in the electoral process are described as are the differences in the styles of the campaign in each borough, i.e., issue oriented, personality oriented, and types of issue differences.

29.24 DATA COLLECTION PROBLEMS AND TECHNIQUES IN RESEARCH AND EVALUATION STUDIES (D, SYMPOSIUM)

WAYNE W. WELCH, University of Minnesota, Chairman

An assessment of the effectiveness of mailed questionnaires as a method for gathering data in large scale research and evaluation programs is presented. Because of the generally low return rate, practitioners use many techniques to reduce questionnaire nonresponse. Substantive studies undertaken to assess those techniques are reported and discussed. Variables included in the studies are: questionnaire content, length/format of questionnaire, cover letter approach, monetary incentive, follow-up procedures, stamped or unstamped return envelopes, anonymity, and geographic region and size of city to which the questionnaires are sent. The feasibility of combining field study and mailing techniques is explored. Examples from research are cited to demonstrate how data gathering methodology can be improved by use of proper mailing techniques and by incorporating field techniques with the mailing techniques.

An Experimental Study of Techniques for Improving Response Rates. Blaine R. Worthen and Evelyn J. Brzezinski, University of Colorado. As a research technique, the mailed questionnaire survey usually suffers from failure to obtain a sufficient proportion of returns so that valid conclusions may be drawn from the analysis of returned questionnaires. A great deal of money and time is spent on techniques to improve return rates. Unfortunately, there is no conclusive evidence that any of the techniques employed are effective. A systematic investigation of commonly used techniques and their relative effectiveness for maximizing response rates is the purpose of this study. Variables included are questionnaire content, length/format of questionnaire, approach used in the cover letter, follow-up correspondence, stamped or unstamped return envelope, and anonymity. The research design is completely crossed; there are 576 cells with 8 respondents per cell, resulting in a sample of 4,608 persons, drawn randomly from the *National Faculty Directory*.

The Effects of Reward in Large Scale Data Gathering. Arlen R. Gullickson, University of Minnesota. One problem of large scale research and evaluation projects is obtaining the cooperation of a large number of participants, particularly when the participants have nothing to gain by their participation. This research study focused on participation rate as affected by monetary incentive together with biographic and demographic characteristics. A sample of 252 schools was used in the study. One principal and a teacher, chosen by the principal, from each school were invited to participate. The variables examined included geographic region, size of city, subject matter, i.e., math or science, grade level, and a five dollar incentive versus no incentive to participate. Subject matter was nested with region, and all other variables were fully crossed.

The Integration of Survey Research and Field Work. Sam D. Sieber, Columbia University. Two distinct traditions have developed around the two leading methods of social research, i.e., surveys and field work. Because of the rivalry between the proponents of these two methods, there has been little opportunity to explore the advantages of combining them in a single project. Most sociological research either utilizes a single method of investigation or assigns a second to an extremely weak role. Examples from the literature and from the author's own research demonstrate how the interplay of the two methods may greatly improve design, data collection, and analysis. Educational Research has been notoriously weak in both of these methods, placing greater emphasis on experimental designs and tests and measurements.

29.25 EDUCATIONAL POLICY STUDY: AN AVENUE FOR TRAINING SCHOOL ADMINISTRATORS AND GENERATING NEW RESEARCH (A, SYMPOSIUM)

FRANK W. LUTZ, Organizer

The objective of this symposium is to suggest a new avenue for training school administrators and a new focus for graduate education and research in educational administration. The training and graduate education of school administrators have generally focused on roles, tasks, and techniques of administrators in educational organizations. As a result, school administrators have operated as managers and facilitators of the status quo. Research has often taken an atheoretical, technical and/or functional–practical aspect.

The concept presented here suggests that school administrators should be change agents concerned not only with the operation and coordination, but, most importantly, with the analysis and reformation of educational policy at federal, state, and local levels. Further, the symposium suggests that the foundation of such training and graduate education of school administrators is the understanding of history-philosophy, economics, anthropology, sociology, and comparative education, e.g., the cultural foundations of education.

"Policy, Education, and History: The Study of Choices" will be presented by Henry C. Johnson. In preparing administrators for understanding and forming policy rather then simply exercising bureaucratic functions, the study of history (and other humanistic disciplines) can make a crucial and productive contribution. The view that historical inquiry is peripheral rests on two false beliefs: (1) that policy-formation is essentially an empirically definable process exhaustively treated by the descriptive sciences, and (2) that history deals exclusively with the past. Policy, however, is a normative, teleological concept, focusing principally on the human action of choosing from among possible goals according to some principle of value. As Collingwood shows, history studies human actions seen as choices, thus examining critically the process most germane to policy study and aiding the construction of possible futures. Furthermore, the research necessary for understanding or justifying policy cannot be reduced to the descriptive study of empirical conditions without removing the normative component integral to human choice and particularly educational choices.

Gary P. Johnson will present "The Formation of Educational Policy and the Preparation of Educational Administrators: An Economic Perspective." Within the context of educational policy and its formation, the present paper examines the preparation of educational administrators from the discipline viewpoint of economics. Specifically, the paper critically examines the belief that economic thinking contributes to "better" policy formation and more adequately prepared administrators, and indicates in what way(s) economics contributes in these two areas. The paper begins with a discussion of educational policy and its formation which establishes a working framework for subsequent analyses and reference. Part two discusses economics and the distinction between 'positive' and 'normative' economics, while indicating how each has distinctly different implications for the study and formation of educational policy. Part three examines the conceptual and analytical economic content of educational policy and educational administration, and part four indicates some of the specific concepts and tools of economic analyses which can contribute substantively to more enlightened educational policy, its formation, and a unique research orientation.

Margaret A. Ramsey will speak on "The Administrator-Observer as Policy Maker." The discipline of anthropology applied to the study of educational policy is one of the functions of the sub-category educational anthropology. The principal method or approach within anthropology is participant-observation, or the field study approach. This method is the chief means of collecting data, analyzing patterns, setting up models and tentative hypothesis to be tested later in order to treat and study societies holistically. Educational anthropology uses the tools of anthropology to study educational structures in order to find solutions to operational situations. In this manner, educational structures are treated for the most part as micro-societies. Administrators may profitably study schools, school boards, school districts, state and federal educational bureaucracies, to arrive at policy formulation and policy solutions by using anthropological models and participant-observer field methodology. This paper suggests models and ways of training administrators in such methodology that fits within a total policy framework.

"A Heretical Perspective on the Recruiting and Training of Educational Administrators will be presented by Yoshimitsu Takei. This paper adopts a critical stance *vis-a-vis* the present system of recruiting and training individuals to become educational administrators. It will be argued that most existing programs recruit students in a *laissez-faire* fashion, concentrating their resources on professional socialization that promotes maintenance of the status quo in both administrative behavior and research conducted. In the case of recruitment, prevailing practices result in junior people being enrolled in the programs; such individuals are unlikely to assume policy-making positions for some time. As for training, current emphasis on practical knowledge and concerns frequently results in future educational administrators being atheoretical in orientation and relatively unconcerned with broad educational issues. This paper proposes that alternative methods for recruitment should be explored and that such programs should adopt a stronger disciplinary focus if the goals of higher quality research and more insightful educational policy-making are to be achieved.

"Comparative and International Education" is the topic to be presented by Frank McKenna. The study of comparative and international education should be an important component in the development of educational policy specialists. Comparative educators elaborate basic issues of educational policy and demonstrate interrelationships of education and the society and economy by investigating the numerous dimensions of the institutional roles of education in a society or in several societies. They seek to discover the validity of time-honored assumptions about education and to locate new social-educational relationships by viewing schooling in multinational or multicultural

perspectives. In general, school administrators and other education policy specialists lack familiarity with the full range of activities in comparative and international education. Concerned with historical, social science, and cross-cultural research, comparative education can assist policymakers by exposing rigorous and less ethnocentric investigations of educational phenomena. Such would provide new and significant inputs into educational programs producing a different type of policy maker and research in educational administration.

32.01 THE USES OF SIMULATION IN EDUCATIONAL ADMINISTRATION (A)

Measurement of Decision-Making Performance in a Simulated Situation in Relation to Critical Thinking, Machiavellianism, and Motivation with Respect to the Amount of Situational Information

BARBARA JO ZIMMER and RICHARD LONSDALE, New York University

The institutional experiment examined the relationship between decision-making performance, using the UCEA produced Monroe City simulated materials, and three test-measured variables of critical thinking, Machiavellianism, and motivation where the experimental variable was the amount of background information. The Ss were divided according to experience and critical thinking ability into two comparable groups. Each S served as principal of Abraham Lincoln Elementary School. The differences in decision-making performance between two groups were analyzed for "Socialization" with respect to the situation. The effects of simulation training experiences on critical thinking ability were measured by differences from pretest to posttest.

The Academic Department Game

P. E. TORGERSEN, R. E. TAYLOR, J. W. SCHMIDT, J. A. SGRO and S. C. CHAPMAN, Virginia Polytechnic Institute and State University

The Academic Department Game is a computer based management game. Its purpose is to introduce players to the decision problems which are faced by the department head in the overall administration of his department. The game mathematically models the relationships among such departmental characteristics as departmental reputation, professor satisfaction, etc., and requires the players to make decisions on a "semester" basis. The game is programmed in the Fortran IV language and is designed for both flexibility of administration and portability of operation. The game will hopefully prove to be extremely valuable in the training and development of academic administrators.

Playing the Role of the Principal: A Second Look at Patterns of Administrative Response

ALAN K. GAYNOR

An initial study of patterns of administrative performance was made by the author during the summer of 1971. Results of this study were reported at the 1972 AERA Annual Meeting. The present study is designed to replicate the 1971 study on a larger sample and in more varied contexts. Information is being sought about the existence of visible and stable patterns of administrator performance (or "administrative styles"). Conclusions will speak to the degree of congruences between the factors and "styles" which emerged from the 1971 study and those which emerge from the 1972 study. The basic hypothesis is that factors will prove relatively stable, even across elementary, junior, and senior high school simulations.

Effects of the Styles of Leadership on Participants Perception of Basic Organizational Hierarchical Needs in a Simulated Decision Making Setting

MARVIN WILLERMAN, Northeastern Illinois University

The purpose of this study was to determine if basic organizational hierarchical needs (BOHN) help govern the decision making behavior of elementary school principals and if these needs can be influenced by an immediate administrator. Three groups of graduate students were placed in a simulated setting, indoctrinated in the principal's role, and assigned superintendents with different leadership styles. Support was discovered for the BOHN concept and the underlying prepotency and need satiation theory. Results of Scheffé's comparisons indicate that only effective superintendents influenced the principal's BOHN operating level and differentially affected task and human relations oriented principals.

32.02 CONTRASTS IN THE PROCESS OF PLANNED CHANGE OF THE SCHOOL'S INSTRUCTIONAL ORGANIZATION (A, SYMPOSIUM)

JOHN S. PACKARD, University of Oregon, Organizer

The object of this session is to identify issues and processes associated with attempts by schools to incorporate educational innovation. In so doing, the focus is primarily upon the organizational consequences of educational change, a topic which has been the abiding interest of Program 20 of the Center for the Advanced Study of Educational Administration at the University of Oregon. The operational concern over the past two years has been staff organizations in which the instructional staff is grouped into two or more persons, *viz.*, differentiated staffing, team teaching, and the multi-unit school.

The first paper of the symposium, by Roland Pellegrin, is entitled "Problems of Administration in the Implementation of Organizational and Instructional Innovations." It summarizes some findings of case studies in the four Differentiated Staffing (DS) schools which had some difficulty fulfilling what they set out to accomplish. Special emphasis is placed on managerial issues as they were important both at the building and central office/project level.

The second paper is entitled "Factors Associated with the Discontinuance of an Educational Innovation," and is to be presented by Tom Wacaster. His paper constitutes one of the case studies reported in the Pellegrin report and goes into some detail about the change process. The analysis concentrates upon specific barriers to a particular educational change—barriers which proved to be somewhat insurmountable despite a rather dedicated commitment to innovation by the school staff.

The third paper, "Changing to a Multi-Unit School," by John Packard, is a summary of some comparative research, the purpose of which was to provide contrasts to the four DS schools mentioned earlier. In this study, the particular interest is in examining the change process in some schools where there was a closer similarity between promise and delivery. Packard's analysis will illuminate change barriers as well as facilitators of the innovative process.

"An Elementary School Under Conditions of Planned Change," to be presented by John Jones, is the fourth paper of the session. Administrative strategies for implementing DS will be outlined, and barriers to innovation identified. This report is also one of the cases used in the paper by Pellegrin.

A common thread in the innovation efforts examined is an alteration of positions and consequent structural attempts to create role behaviors different from those of the self-contained classroom. "Role Processes in Teaching Teams," the subject of Robert Everhart's paper, examines how roles come to be defined in teams, as well as some

patterns of emergent role behavior. The paper draws from applicable program studies as well as from other works which speak to the issue.

32.04 POLICY ANALYSIS AS A FOCUS FOR TRAINING PROGRAMS IN EDUCATION ADMINISTRATION (A, SYMPOSIUM)

DALE MANN, Teachers College, Columbia University, Chairman

There is considerable dissatisfaction about the adequacy of training programs for educational administrators. The institutions responsible for that training, the government and private agencies that support it, and the governments that certify and utilize the graduates are all questioning current procedures. One response which is gaining some momentum involves linking administrator training with education policy analysis. The idea has many ramifications, for example, the kinds of skills to be acquired, the sequence of training experiences, the faculty specializations employed, the ability of administrators trained in policy analysis to meet future problems.

The institutions represented by the participants have each approached the use of policy analysis as a focus for graduate training in a different way. Some are heavily quantitative and economic; one is focused on urban problems; another relies on legal analysis; another approaches education policy as a class of policy problems in public administration as a whole. Each participant will outline: the distinctive features of his institutions's policy-centered program, the identified needs to which it is responsive, and how it differs from previous or more traditional preparation programs.

The two discussants represent, in effect, the consumers of analysis, one from the point of view of a major foundation committed to improvement in education and the other from one of the U.S. Office of Education's principal programs in support of educational innovation. The symposium is designed to provide a critical exposure to a range of alternate policy-centered training programs.

32.06 DEVELOPING EFFECTIVE EDUCATIONAL ORGANIZATIONS: CONCEPTS, REALITIES, AND STRATEGIES FOR CHANGE (A, SYMPOSIUM)

FRANCINE S. HALL, The Ontario Institute for Studies in Education, Organizer

The fundamental goal of most planned organization change efforts is to increase the effectiveness of the organization. In their enthusiasm to change school systems, however, change agents often fail to consider what the desired outcome should be and, as important, what may be entailed in its pursuit. The result is that organization change strategies in school systems are often adopted rather than developed on the assumption that what works in one type of organization will work in another. The validity of this assumption is questionable.

School systems differ from many other types of organizations in several significant ways. Planned change strategies need to account for these differences, the realities inherent in educational organizations. Adopted strategies, by definition, fail to do so. Adopted strategies may further fail to specify and operationalize appropriate objectives for the change effort. Such strategies may not be directed at the most critical locus or target for change in the school system. It is not surprising, then, that adopted strategies often fail to realize lasting change or increased effectiveness.

There is a need to develop change strategies that are specific to educational organizations. Such strategies must be based on the reality as well as the theory of school systems as organizations. This symposium was planned to address this need. The purpose of the symposium is threefold: (1) to examine the concept of effectiveness as it applies to educational organizations, (2) to consider problems involved in developing effective educational organizations, and (3) to suggest objectives and strategies for planned change efforts in school systems.

The first paper, "The Concept of Effectiveness and the Educational Organization," will be presented by Francine S. Hall of the Ontario Institute for Studies in Education. This paper examines the concept of effectiveness in relation to educational organizations, and suggests a conceptual framework for depicting the effective public school system. The discussion focuses first on properties of the school system as an organization and their implications for effectiveness criteria. Themes in the literature on effectiveness and health are then considered as they might apply to the school system. Finally, these themes are integrated and extended in a model specific to the school system as an organization. Ms. Hall concludes that: (1) educational and organizational effectiveness are interdependent concepts, and (2) assessing effectiveness in school systems requires an extended conceptualization of the organization and its boundaries.

Laurence Iannaccone of the University of California at Riverside will present the second paper, "The Organization-Environment Relationship and Change: Critical Political Aspects." His paper examines political factors in the relationship between the organization and its "environment," and considers their implications for change strategies. Four main issues are discussed. First, the need to translate the general concept of organizational environment into school specific factors which are relevant to change efforts is considered. Following this, the discussion focuses on the educational political culture and ideology as distinct from general political ideology. Third, the need for a comprehensive evaluation of school systems which includes the political dimension is addressed. Finally, the importance of community readiness as a factor in organization change is discussed. The viewpoint stressed is that change efforts must shift their emphasis from packaging change to identifying and analyzing targets for marketing change in school systems.

The third presentation, "Organization Goals as Product and Process," will be given by T. Barr Greenfield of the Ontario Institute for Studies in Education. Theory in formal organization holds that organizations arise as mechanisms for attaining goals. Goals in this theory are independent of the organization, though they shape the organization and define the products desired of it. This theory suggests that process in schools is of concern only as it yields products that are approximations of the educational goals set for them. Product goals foster rational decision-making in organizations by providing external criteria for evaluating their process and structure. Not all goals that energize an organization relate to products the organization creates. Some goals which turn out to be very powerful in shaping the organization bear not upon the desired outcomes or products of the organization but rather upon process alone. Many of the current reforms advocated for schools rest upon process goals. Reformers want new kinds of schools where the climate of the school is "authentic" or where the learning is "humane." While such reformers may be concerned about what the school achieves, they are far more concerned with how it achieves it. The relationship between process and product goals is explored, and a fundamental distinction between them which provides contrasting criteria for developing and assessing schools is suggested. The question of whether organization development broadly conceived is an end in itself, or whether it serves to increase organizational effectiveness in terms of product achievement, is asked.

The last paper, "Intervention Theory and Practice in School Systems," will be presented by Douglas T. Hall of York University and Ronald Robinson of Stevenson and Kellog, Limited. The authors, representing the viewpoints of the academic and the practicing consultant, will consider the integration of intervention theory and practice in public schools. The first part of the presentation will be a discussion of intervention theory as a guide to the activities of the organizational change agent. The distinctive characteristics of the public

school system (as opposed to business, voluntary, and other types of organizations) are considered, and ways in which the intervention model might be modified and made more directly relevant to school systems described. The second part of the presentation will draw upon case material from actual intervention activities in public school systems. Factors leading to more effective consultative relationships will be identified. These factors will be compared to the theory-based intervention approach described earlier. Finally, a revised version of the intervention model will be developed for the school system.

32.07 STUDENT TEACHING (C)

Student Teaching Activity as an Additional Incentive for Learning

JOHN K. PIRKLE, JOHN W. DEICHMANN, Southern Illinois University at Carbondale, and JACK H. HILLER, Southwest Regional Laboratory for Educational Research and Development

Two experiments were conducted to determine if expectancy to teach serves to increase learning beyond that produced by expectancy to be objectively tested. In the first experiment, Ss (N = 54) listened to a tape recorded lesson with one-half the group expecting a following test and the other half expecting both to teach the same lesson and to be tested. Test results for both groups were nearly identical. In the second experiment, Ss (N = 54) read the lesson and had their lecture performances taped for presumed playing before large audiences. Once again expectancy to teach did not enhance student learning.

Attitude Changes in Student Teachers as a Function of Type of Student Teaching Experience

PAUL H. WILBUR and C. THOMAS GOODING, State University of New York At Oswego

One hundred and five teacher trainees participated in different types of student teaching. The *Teacher Perception Q Sort* was used to evaluate changes in perception. Five factors were measured: (1) self revealing/self concealing, (2) learner/teacher centeredness, (3) broad/narrow view of teaching, (4) process/facts oriented, (5) freeing/controlling attitudes. A factorial ANOVA was performed on data from three types of student teaching. All three groups showed significant changes on factors one and five, becoming more concealing and controlling, with significant differences between team teaching and more traditional approaches. Results support calls for new experimental teacher professional education programs.

Interaction Analysis and Self-Concepts of Student Teachers

LOUISE M. SOARES, and ANTHONY T. SOARES, University of Bridgeport

In comparing the pretest-posttest scores of student teachers, it was discovered that the group which had been exposed to the Flanders Interaction Analysis significantly increased their self-concept scores, whereas the control group not so treated did not. This result occurred whether the instrument measured self-concept of the individual or self-concept as a prospective teacher. The E group was also significantly higher than the C group on the posttest. It was concluded that, perhaps because of an increased awareness of the verbal interaction in the classroom and improved interpersonal climate, an increased self-image occurred.

An Inexpensive Method for Providing Immediate Feedback to Teachers-In-Training

STUART SILVERMAN and ELLEN KIMMEL, University of South Florida

This study was concerned with testing a low cost method for providing undergraduate teachers-in-training with immediate feedback on their classroom performance. Student assistants, using wireless FM microphones, reinforced student teachers (who were outfitted with FM receivers) by saying "good" each time one of a specified set of responses occurred. Analysis of variance indicated that the method was effective in increasing teacher behaviors in two of the six categories under study. Instances of behaviors in the other categories occurred so infrequently that there was virtually nothing to reinforce.

An Investigation into Student Teacher Problems during Practice Teaching

THOMAS L. HARROW, CHARLES D. DZIUBAN, and ROBERT A. ROTHBERG, Florida Technological University

Student teachers, during the final quarter in college, were asked to define the main problems they encountered in the schools during practice teaching. A collection of 50 problems was studied with respect to grouping of problems and ranking the problems in priority. Over 300 student teachers voiced their opinions as to the most important problems they had doing their practice teaching. A principal component analysis yielded five main areas where student teachers need assistance during their in-school activities. These problem areas were as follows: (1) administration, (2) student discipline, (3) student peer groups, (4) student motivation, and (5) student policy breakers.

A Study of the Relationship between the Rankings of Supervising Teacher Effectiveness and Attitude toward Education

WILLIAM E. LOADMAN, Ohio State University and JAMES M. MAHAN, Indiana University

This study ascertained the relationship between rankings of 47 supervising classroom teachers and their attitudes toward education. Independent rankings of supervisory effectiveness were obtained from 47 classroom teachers, 91 student teachers, and 12 university personnel. Each classroom teacher completed two standardized attitude toward education scales which yielded four scores. The results indicated that teachers with progressive and favorable attitudes toward education tended to be perceived by student teachers as somewhat less effective supervisors. These results are of critical import to persons concerned with effective student teacher-classroom teacher interaction in field-based preservice programs.

32.10 PROTOCOL MATERIALS IN TEACHER EDUCATION– A PRODUCT DISSEMINATION SESSION (C, EXPERIMENTAL)

WALTER R. BORG, Utah State University, Chairman

The Product Dissemination Session had several objectives. The first was to disseminate information about rigorously developed educational products that are ready for operational use. The second was to familiarize the audience with the nature of the products by handing out product samples, showing multi-media materials from the product and carrying out other "show and tell" activities. The third was to provide research evidence and evaluation data relative to the product effectiveness that will help the potential user make decisions about adopting the product in question.

32.11 DECISION MAKING IN AMERICAN EDUCATION (A, SYMPOSIUM)

MAX G. ABBOTT, Center for the Advanced Study of Educational Administration, Organizer

The symposium is concerned with the findings of a major comprehensive study of the decision-making culture of American education. The study is based on both comparative and longitudinal data; it involved 100 school districts that constituted a representative sample of all school districts in the United States. Data were collected by interviewing school board members, superintendents of schools, and community members in all 100 participating districts, and by conducting follow-up case studies in seven school districts with differing profiles based on the interview data.

The findings of the study have been summarized as follows. There is an impending crisis in American education, produced in part by the insulation of decision makers from community and client needs, and by the consequent inability or unwillingness of schools to adapt to the changing needs of their communities and clients. Surveys indicate that there is very little general public knowledge of educational policy, and, indeed, very little interest in educational policy until a crisis erupts in the community. Most of the respondents know very little about the educational program in their community, and are concerned primarily with breaches of discipline. Further, organized interest groups in a community normally do not involve themselves in the educational decision-making process. Here, again, it is only when a crisis erupts in the community that the normal group activity of the political process becomes apparent in education. The insulation of decision making results in a relatively unique characteristic of the process. Unlike most decision-making bodies, the absence of continuing feedback disposes educational decision making toward the necessity of reacting to crisis situations. Decisions are usually made without the awareness of community demands until segments of the community begin to articulate demands because of their feeling of disfranchisement by the educational system. Since such demands are not a normal part of the decision-making process, they are usually met with hostility. Hostility, of course, produces an exacerbation of conflict until there is no room to negotiate. The American educational decision-making system is simply not attuned to the necessity of interaction with relevant publics.

Within the decision-making structure, school board members, the legally elected representatives of the various publics, are virtually without power. Studies indicate quite clearly that in most cases school boards prefer to defer to the superintendent and his staff whom they regard as experts. Superintendents, consequently, come to define virtually every issue before the board as one in which expertise is the most useful criterion for decision making. The entire process of lay control is subverted by the inability of school boards to establish contacts with constituent groups and to represent the needs of constituent groups in the decision-making process. Alone with the superintendent they offer no alternative to his values. The study concludes that, "Rather than serving as a conduit to channel popular views to the administrators, boards come to define their job as selling the administration's program to segments of the community." School boards and superintendents are imbued with the values of unity and strive towards consensus. Reflecting the dominant values of the American educational system, conflict is regarded as unfortunate, and unanimity as a virtue. Although various publics have the legal opportunity to influence educational decision making through their representatives, such representatives are, more often than not, uninterested in representing them.

Most school boards and superintendents are disproportionately representative of the white, middle-class, Anglo-Saxon, Protestant segment of the society. Schools are not unique in this, but the under-representation of minority groups is greater on school boards than in other governing institutions. Further, school boards tend to be self-perpetuating. School board members and superintendents seek out potential candidates who are suitable to them, and encourage them to run. Outside groups, those not enjoying the legitimacy of the board and superintendent, are discouraged. Three-fifths of a new school board received most of their encouragement to run from the incumbent board. It is not surprising, therefore, that electoral competition for board positions is bland, fundamental issues of educational policy are rarely discussed during such campaigns, and turnout is quite low.

33.01 CURRICULUM EVALUATION: PERSPECTIVES FROM THE USERS AND DOERS OF EVALUATION (B, SYMPOSIUM)

F. MICHAEL CONNELLY, The Ontario Institute for Studies in Education and The University of Toronto, Organizer

The purpose of this symposium is to examine and set forth ideas on curriculum evaluation from the point of view of actual evaluators and actual users. Each of the participants has utilized his extensive development and evaluation experience to generate theoretical accounts of curriculum evaluation which have an empirical base. Westbury challenges the usual specification of goal-means of implementation priority order; Karlson and Stodolsky generate a basis for the evaluation of open classrooms; Robinson focuses on the variety of classroom conditions under which different program goals may be achieved; Connelly utilizes a somewhat similar notion in his focus on teacher choice and curriculum development; and Wahlstrom challenges some of the standard methodological design notions appropriate to actual field tests under normal classroom conditions.

The educational significance of the symposium is related to the fact that, while evaluation models abound, there is very little of practical use to actual evaluators and users of evaluation. This symposium attempts to realize operational notions of curriculum evaluation.

Alfred L. Karlson, University of Massachusetts, and Susan S. Stodolsky, University of Chicago, will speak on "Predicting School Outcomes from Observations of Child Behavior." A curriculum which incorporates free-choice or free-play conditions for the activity of children cannot be meaningfully assessed as a "treatment." The study to be discussed involved following 43 Head Start and middle class children participating in a contemporary Montessori Free School over an academic year. Observations of each child were collected on a near daily basis in order to establish patterns of participation in the activities available in the classroom. Pre- and posttest measures of cognitive acquisition (including WISC and Stanford-Binet) were obtained on the sample.

The results clearly demonstrate that children participate differentially in the classroom activities. Activity patterns based on time allocations are highly predictive of the extent of cognitive change experienced by individual children, controlling for initial cognitive level, and other relevant variables. Using conservative statistical criteria, approximately 76% of the variance in WISC change scores can be accounted for by five activity predictors. Implications for defining outcome and treatment in evaluating open-choice curriculum will be discussed.

James Robinson, University of Colorado, will speak on "Quantitative Evaluation of the BSCS Human Sciences Model." A model for evaluating classroom trials of curriculum materials and the results obtained from the evaluation is described. The curriculum materials were produced as a part of the development of human sciences, a BSCS multi-disciplinary program for the middle school. The materials and the evaluation model were designed to score descriptive data and judgments regarding the conditions in which the materials were tested, and the effects, conditions, and materials produced. The purposes of the evaluation were twofold: (1) to score data and judgments that will directly influence the materials to be produced for grades six, seven and eight, and (2) to initiate the test of instruments and procedures to

be used in the formulative evaluation of the sixth, seventh and eighth grade materials.

Classroom trials of the materials were conducted over a 15 month period in 18 classrooms in the United States. Classrooms were selected to provide data on as wide a range of student groups as was feasible. Schools from the rural south and rural midwest; inner city, northeast, midwest, and west coast; urban northeast, south, midwest, and west coast; and suburban east coast, northwest, and west coast were included in the classroom trials.

Assumptions about middle school students, their variability and growth, about pedagogy, and about the kinds of materials that are needed at the middle school level are presented in a rationale statement. These assumptions are a part of the framework and constraints that have guided the development of the materials and of the teaching and learning strategies that are subject to evaluation. The assumptions are not themselves to be evaluated in this study.

"Curriculum Evaluation Expanded and Expounded" is the title of the paper to be given by Merlin Wahlstrom and F. Michael Connelly, the Ontario Institute for Studies in Education and the University of Toronto. A major goal in this study was to derive discussion models, an evaluation of their appropriateness in regular classrooms, and the development of associated assessment instruments. Methods utilized were designed to illustrate comprehensive curriculum evaluation in contrast with the usual emphasis on measurement of student progress. The report is on an actual evaluation study, involving over 40 teachers in 35 schools. Although the traditional use of evaluation is an important component, the orientation focused upon the wider role of planning and curriculum development. The goals of the curriculum were not regarded as ultimate constants. Teacher and student data were used to provide both student and program formative evaluation, and information on a set of hypotheses related to project assumptions.

The educational significance of this study is related to the fact that research outcomes have been of little service to curriculum development in recent years, a fact which is symptomatic of the failure of curriculum development. Some of the factors associated with this situation are: a lack of curriculum research; the character of the research which inappropriately tends to use the agricultural control-plot methodology and competitive studies of ideas, methods, and materials; and the fact that developers often come from fields outside of education and are unaware of or resistant to the available curriculum research.

Major outcomes are field-tested science materials, a documented evaluation strategy with results available as an example for persons now faced with the responsibility of evaluating programs, and knowledge relating to project assumptions and development processes.

Ian Westbury, University of Chicago, will report on the "Evaluation of Goal-Focused Program in Social Work." Results from an evaluation study of a new masters program in social work will be described. The paper will focus on the interaction between program goals which are conceived in terms of (1) the need to train social work students in three methods of social work, and (2) the need to prepare students who could address the problems of disorganized urban communities, and the five year process of operationalizing these goals.

The program has had only mixed success in realizing its aims. It will be argued that the relative failure of the developmental undertaking is a consequence of an (understandable) preoccupation on the part of developers with the nature of the goals that played so important a part in the initiation of the project. Much less concern than is necessary for successful curriculum development was given to the means by which these goals could be enacted. This failure in priorities can be attributed to both the dynamics of the developmental group and a lack of understanding of the nature of the developmental task.

There are important generic implications of this study. Many programs have the same goal-focused starting point (e.g. "urban education," "open education") and seem to follow the same rocky road as the social work program studied here. It can be hypothesized that goal-focused curriculum development too often results in less than successful operationalization. Curriculum policy makers need to ask whether such goal-directed proposals have given sufficient attention to the means by which goals can be enacted.

"Curriculum Evaluation and Teacher Choice" is the title of the paper being presented by F. Michael Connelly, and Merlin Wahlstrom, Ontario Institute for Studies in Education and The University of Toronto. An evaluation role from the perspective of the teacher will be described. The notion is derived from a larger view of curriculum development which holds that there is an inevitable tension between the attempts by developers to realize their intentions in practice, and the demands of actual classroom situations as expressed by teachers. Although there are an increasing number of proposals which see evaluation as involved in goal specification, evaluation also should yield descriptive accounts of the curriculum-in-use under a wide variety of actual situations. This information will contribute to informed teacher choice.

The authors' view of evaluation is based on a study of the Patterns of Enquiry project at OISE. This project prepared four sets of discussion units. The evaluation-research design is aimed at accumulating the usual formative and summative evaluation measures as well as the more important descriptive and theoretical accounts needed for intelligent teacher choice.

33.03 CURRICULUM STUDY: CONCEPTS, GOALS AND INVOLVEMENT (B)

Using Conceptual Frameworks to Improve Instruction

ROGER V. BENNETT, University of Maryland, and
ESTHER ZARET, Marquette University

Two conceptual models were developed and applied to an actual instructional episode. An evaluation of each model highlighted its merits and limitations. A synthesis of the two independent analyses of the same episode resulted in the identification of a number of mutually reinforcing contributions of the two models. A critique of the development and application of the two models led to the formulation of several guidelines to direct further efforts toward using conceptual frameworks to improve instruction.

An Experimental Study of the Effects of Teacher Participation in a Curriculum Engineering Task on a Dimension of Curriculum Implementation

JAMES R. GRESS, The Ohio State University, Marion

Experimental evidence was gathered to show that teacher participation in curriculum engineering decision-making positively affects curriculum implementation. The experimental treatment focused on teacher involvement in curriculum evaluation structured according to principles of organizational change. Data were gathered during classroom observations using a modified version of the OScAR 4 V from which scales of verbal behavior described by the curriculum were constructed. A 2x3 multivariate ANOVA and multiple linear discriminant functions were used to test and characterize hypothesized differences in selected dimensions of verbal behavior in social studies instruction between 24 teacher-classes in two treatment groups and at three grade levels.

33.05 MATHEMATICS CONCEPT LEARNING AMONG PROSPECTIVE ELEMENTARY SCHOOL TEACHERS (C, SYMPOSIUM)

GEORGE W. BRIGHT, Northern Illinois University, Organizer

The objectives of the symposium are (1) to report recent research in mathematics concept learning among prospective elementary school teachers, (2) to discuss prospective teachers' concept learning, and (3) to suggest appropriate research hypotheses for future studies of concept learning among prospective elementary school teachers.

The first paper, "Relationships between Cognitive Style and Instructional Treatments among Preservice Elementary Teachers", will report work done by Gerald Smith, the University of Texas at Austin. The study was an investigation of interaction between two instructional treatments for preservice elementary teachers and the cognitive style of flexibility of closure on two responding variables; achievement and retention. The instructional treatments were a written self-paced module and a teacher demonstration presentation on the topic, "Teaching Division of Rational Numbers in the Elementary School." The Hidden Figures Test was used to measure flexibility of closure. Ss were 48 students enrolled in elementary mathematics methods courses. Results indicated no difference between treatment groups and no interaction between treatment methods and flexibility of closure on either criterion. Significant correlations indicated that the relationship between flexibility of closure and both achievement and retention was higher for the module group. The conclusion was that the cognitive style of flexibility of closure is not useful as a predictor of achievement or retention when considering assignments to the specific instructional treatments employed in this study. However, this learner characteristic is relevant when working with individuals in an instructional situation.

The second paper, "The Effects of Differing Presentations of Mathematical Word Problems upon the Achievement of Preservice Elementary Teachers," will report work of Leland F. Webb, California State College, Bakersfield, and James M. Sherrill, the University of British Columbia. A test consisting of ten mathematical word problems was developed in three forms: (1) ten printed word problems with no pictures included, (2) the same 10 printed word problems with accurate pictorial representations of the problem situations, (3) the same ten printed word problems with inaccurately drawn pictorial representations. Written instructions explicitly stated that if pictures were included in the test, they *may or may not* be accurately drawn. The three forms were randomly ordered and distributed among 81 preservice elementary teachers. A significant difference ($p < .0005$) resulted in favor of those receiving the accurately drawn pictorial representations. There was a significant difference between form (1) and form (3) in favor of the group receiving *no* pictorial representation. Implications for teaching preservice elementary teachers, for teaching in general, and for additional research will be presented.

"Advanced Organizers and Objectives in Teaching Mathematics" is a report of work done by Larry K. Sowder, Gary L. Musser, Ben V. Flora, and George W. Bright of Northern Illinois University. A series of four 20-minute TV tapes were developed by the Es to provide instruction on concepts of integers for prospective elementary school teachers. Each tape was accompanied by objectives, pre-tape activities, post-tape activities, and homework problems. Advance organizers on the field axioms and on mathematical systems were written and randomly assigned to Ss in each of two groups. The first group consisted of 23 students enrolled in the first-semester mathematics course required of prospective elementary school teachers. Three of the four TV tapes were used as instruction. No significant differences were detected, although the 'field' group had a higher mean. The second group consisted of 31 students enrolled in the optional second-semester mathematics course for prospective elementary school teachers. All four TV tapes were used as instruction. No significant differences were detected, although the 'systems' group had a higher mean.

"Attainment of Mathematical Concepts by Preservice Elementary School Teachers" will be presented by Leland F. Webb, California State College, Bakersfield, and E. Glenadine Gibb and L. Ray Carry, the University of Texas at Austin. This study was designed to investigate three questions related to mathematics concept learning among preservice elementary school teachers in a two-course mathematics sequence: (1) Are Ss deficient in knowledge of key concepts of elementary mathematics prior to their entrance into the courses? (2) Is there a significant gain in knowledge of these concepts by Ss as a result of completing the courses? (3) Is the gain in knowledge of the concepts constant across instructors? A 46-item test was developed to encompass selected concepts recommended for inclusion in such a sequence by the Committee on the Undergraduate Program in Mathematics. The test had four subscales: (1) sets; (2) operations and relations, (3) number systems, and (4) number theory. Ss were 285 students in the first course of the sequence and 130 students in the second. Pre- and posttests were administered to all Ss. In general, the data showed the following: (1) Mean scores of Ss entering the first course indicated a deficiency in each of the four subscales. (2) Ss in the first semester course improved significantly on subscales 1, 2, and 3, but not on subscale 4. (3) Ss in the second semester course improved significantly on *all* subscales. (4) Differences across instructors were not significant as measured by rank order correlation of pre- and posttest class means. Implications for teaching and recommendations for expanding and improving the test will be discussed.

Much effort is devoted to teaching teachers, and a significant portion of this work is in subject content areas. Surprisingly little has been done to study the concept learning of prospective teachers, although much has been done to study the concept learning of the children they will teach.

33.07 THE WHITE RESEARCHER IN THE BLACK COMMUNITY: A DILEMMA (C, SYMPOSIUM)

JUDITH K. SHANAHAN, Archdiocese of Indianapolis, Organizer

The purpose of the session is to sensitize college and university faculty directing student research to the problems of the white researcher in the black community. The problems will be approached through presentation of an example of such research recently completed in Seattle's black community. This study of young black and white subjects' racial attitudes and the experiences of the white experimenter directing the study will be used as a springboard for discussion of varied viewpoints of the black and white educational community toward such research. Viewpoints presented will include a suggested moratorium on all educational research involving black subjects, restriction of research on black subjects to black researchers, restriction of researchable topics whether conducted by black or white researchers, and sensitization of white researchers to the black community.

"The White Researcher in the Black Community: A Case History" will be presented by Judith K. Shanahan, Archdiocese of Indianapolis. This presentation will utilize a recent example of white-directed research within the black community. The study, "The Effects of Modifying Black-White Concept Attitudes of Black and White First-Grade Subjects Upon Two Measures of Racial Attitudes" (Seattle, 1972) will serve both as a case history and as a springboard for discussion.

Assuming a relationship between culturally induced connotations for the colors black and white and attitudes toward black and white persons, the experimenters attempted to neutralize the subjects' connotations for black and white objects using a reinforcement schedule. Subjects were then tested for transfer of color modification to two measures of racial attitudes.

Both theoretical and practical issues raised by the white experimenter in the black community will be examined, including rationale for such research, validity of measurements, observations, and interpretations of data by a non-member of the black community, securing school district approval, obtaining parental consent, and handling community concerns.

Barbara Williams, University of Washington, will speak on "The White Researcher in the Black Community: Black Perspectives." There

is increasing conern in the black educational community about issues that arise when research is conducted on black pupils. Much discussion has centered around the following questions, which form the basis of this paper: (1) Should research in the black community be conducted only by black researchers? (2) Are there researchable topics which sould not be explored, by either black or white researchers? (3) Should a moratorium be declared on research in the black community?

Many black community members have concluded that white researchers have no place in black communities. Discussion will center on some reasons underlying their conclusion. The second question will be discussed from the perspective of those who assert that researchers are morally obligated to avoid research in areas where results could prove detrimental to some segments of the population. The last question will be discussed from the viewpoint of those calling for a moratorium on research in the black community.

"The White Researcher in the Black Community: White Perspectives" is the title of the paper to be given by Anton Lahnston, Boston University. Because educational research is needed with all students, this discussion endorses and encourages the work of black and white researchers with black subjects–a position which raises several major concerns. This paper will focus upon the fact that researchers must: (1) thoroughly understand and respect cultural differences, (2) be fully aware of possible reactions of black pupils to white researchers, (3) provide adequate safeguards in using instruments and interpreting and using research results. As an alternative to the impractical ideal that restricts a researcher to his own cultural community, this paper discusses the utilization of teams of researchers of mixed racial and/or cultural backgrounds.

In handling the effects of white researchers on black subjects, the engagement of both black and white researchers with the same and/or different black subjects is considered. The third question to be considered emanates from and transcends both previous questions. Adequate safeguards that will enhance rather than demean black pupils' integrity must be a part of any research.

33.08 FACTORS IN INSTRUCTIONAL EFFECTIVENESS (C)

Construct Validity of Test Items Measuring Acquisition of Information from Line Graphs

J. R. PRICE, VICTOR R. MARTUZA, and JAMES H. CROUSE, University of Delaware

Research on the effectiveness of graphical displays for information acquisition and retention lacks a system for classifying graph information and generating test items to assess learning. The purpose of this study was to validate a system based on two types of information and two types of comparisons. Results of an analysis of variance indicated differences in learning predictable from the classification system; however, a multitrait-multimethod matrix analysis failed to provide evidence of trait validity for the system's informational constructs. In light of these results, a graph information processing strategy was proposed in which subjects utilize data point information.

Effects of the Amount of Information, Organization of Information, and Study Time on the Processing of Quantitative Information Presented in Graphical Form

VICTOR R. MARTUZA and MARY L. WOLFE, University of Delaware

Amount of information, organization of data displayed in bar and line graph form, and study time were varied in several experiments, and the relative effects on retention by college students were measured, using multiple choice items requiring recall of single points, point comparisons, trends and trend comparisons. Recall decreased as information per time unit increased. Single point items were most easily answered, trends and trend comparisons were most difficult, and organization had no apparent effect. Encoding strategies inferred from subjects' self-reports suggest that memorization of numerical data may be an effective aid in processing graphical information.

Fixed Interval Reinforcement and Continuous Daily Feedback on Academic Performance–A Conjunctive Confounding of Schedules

PATRICK A. QUIGLEY, University of Southern Mississippi, and JOHN M. NEWELL, University of Florida

The purpose of the study was to produce self-control of academic behavior in adolescents by providing continuous, self-generated feedback through various feedback devices and to assess the relative merits of each device. The treatment effects were significantly different from their pre-treatment baselines, but not different from the last post-treatment baseline. Results suggest that: students demonstrated self-directed change of performance rates with the devices; terminating the last phase conjunctively with the end of the school year explains the fixed interval scallop, and weighting daily work more may reduce scalloping and assure self-control through the end of the year.

Effects of Temporal Factors on Ability Attributions in a Tutoring Situation

ROBERT S. FELDMAN and VERNON L. ALLEN, University of Wisconsin

Subjects observed a filmed tutoring lesson in which the tutee was either consistently successful on both parts of the lesson, consistently unsuccessful, began poorly and later did well, or began well and then did poorly. Subjects observed either both parts of the lesson at one time, or saw them separately by two days. Results showed a primacy effort in ability attributions: a subject's attribution was determined by the tutee's performance on the first part of the lesson, regardless of his second-part behavior. There were no differential effects due to observing the parts of the lesson separately by two days.

The Influence of Instructional Factors on Various Learning Situations

WALTER G. HAPKIEWICZ and WILLIAM H. SCHMIDT, Michigan State University

An attempt was made to determine which of the salient instructional characteristics of different methods of teaching facilitate learning in various situations. The technique employed used test items descriptive of various learning situations as treatments in a 2^5 factorial design. Several significant interactions were found amongst the five factors studied: (1) cognitive instructional objectives (presence vs. absence), (2) higher vs. lower objectives, (3) affective objectives (presence vs. absence), (4) teaching method (expository vs. discovery), and (5) subject matter (science vs. humanities). In addition, the analysis of covariance structures revealed that the major factor contributing to individual differences was the specification or omission of affective objectives.

33.09 RESEARCH METHODOLOGY IN NATIVE AMERICAN EDUCATIONAL SETTINGS (G, EXPERIMENTAL)

ROBERT NORRIS and PATRICK LYNCH, Organizers

A group of five Indian researchers will report on their methodology and its relation to educational policy. Problems in the use of methodology in Indian education, adaptation of instruments, relation-

ship to subjects, relationship of the observer to his institution, effects of institutional climate upon research, the translation problem, and the relationship of the researcher to very young subjects will be discussed. Each of the five researchers will describe methodology, design, and related research policy for Indian education. Research settings include the dormitory schools, Indian communities, Indian school boards, public schools, and the Bureau of Indian Affairs. The session will include brief presentations by each researcher followed by interaction between researchers and audience on the problems and recommendations they have presented.

Presenters are: Delton Cox, Choctaw Tribe of Mississippi; Dennis Fox, Bureau of Indian Affairs, Albuquerque, New Mexico; Irvin Jones, Bureau of Indian Affairs, Window Rock, Arizona; Pauline Sanchez, Bureau of Indian Affairs, Window Rock, Arizona; John Tippeconnic, Bureau of Indian Affairs, Albuquerque, New Mexico.

33.10 TEACHING AND THE OPEN CLASSROOM (C)

Teacher Perspective on Change to an Open Approach

MARIANNE AMAREL, ANNE M. BUSSIS, and
EDWARD A. CHITTENDEN, Educational Testing Service

The teacher's role in open educational settings is the central focus of the study. The perceptions, understandings and beliefs of 66 teachers (K–4th grade, associated with open education programs for at least two years) regarding basic issues of implementing an open approach were examined through in-depth professional interviews. Factors that teachers perceive as hindering or facilitating change in open directions were identified; a study of the relationship of beliefs and attitudes about educational issues to instructional practice was initiated.

Development of Situational Task Methodology for the Evaluation of Process Outcomes in the Open Classroom

ROBERT K. RENTFROW, OCEA GOLDUPP, and
MAURE HURT, JR., University of Arizona

The widespread introduction of open classroom practices into American education has been marked by a relative absence of effective techniques to evaluate the outcomes of these procedures. The Classroom Attitude Observation Schedule (CAOS) was developed from current observation techniques, and incorporates a modification of the classroom environment (teacher absence) to provide information on children's self-directed learning. The CAOS system records the type of classroom activity, grouping of both children and teachers, and the incidence of inappropriate learning behavior. Data from eight Head Start classrooms, representing different classroom styles, indicated many important differences between open classrooms and more traditional classrooms.

Evaluating the Open Classroom

BRUCE W. TUCKMAN, DAVID COCHRAN, and
EUGENE TRAVERS, Rutgers University

A Title III open classroom project was run in Wayne, New Jersey, in grades 1-3 in one elementary school and grades 1-5 in a second. After one year of the program, comparisons with grades 1-5 of a matched control school in the same community were made. Open classroom teachers were found to be more flexible in their use of space and organization of classroom activities, more creative, more warm and accepting. Pupils did not differ on achievement or problem-solving, but open classroom children had more positive self-appraisals and attitudes toward school than control children. Open classrooms were concluded to be effective in many respects.

Open Education and Curiosity: Empirical Testing of a Basic Assumption

CAROL CORLIS and JOEL WEISS,
The Ontario Institute for Studies in Education

A major assumption underlying open education is that curiosity will be fostered and is necessary for further learning. This study investigated the relationships between open education, defined both programmatically and architecturally, and curiosity behaviour. Openness of program was measured by the Dimensions of Schooling Questionnaire (DISC), and curiosity was measured by the Non-verbal Curiosity Test (NVC). The sample consisted of 237 11-year-olds from six schools having extreme high and low DISC scores for three architectural types: open space, combination space, closed space. Results will be discussed relative to assumptions and implementation of open education.

Teacher Verbal Behavior as a Component of Adventitious Learning

JOHN W. GREGORY, University of Florida, and
ALAN R. OSBORNE, Ohio State University

Teacher verbal behavior was investigated as a possible instructional component of adventitious learning (incidental learning from incidental instruction). Seventh-grade mathematics students of five teachers with high frequencies of conditional moves were compared with students of five teachers with low frequencies of conditional moves on a measure of conditional reasoning ability. Significant differences and positive correlations existed after multivariate analysis of covariance (pretest of conditional reasoning as covariate).

34.02 THE SOCIAL PURPOSES OF EDUCATION: CURRICULUM AND SOCIAL NEEDS (B, SYMPOSIUM)

ELIZABETH LÉONIE SIMPSON, University of Southern California, Organizer

The aims of education, as institutionalized in American society today, are under severe attack. Against the broad framework of expressed cultural values, the curriculum (in the broad sense, including the social system of the school and its interactions with the community) is seen at worst as irrelevant and destructive and at best as an elitist mechanism for the sorting of the young into positions of more or less power and status through a hierarchy of values which handicap the noncognitively oriented, non middle class, nonwhite, and nonconforming child. The thesis of the symposium is that curriculum should serve such social needs of a democratic culture as tolerance for diversity, the building of community, the reduction of cultural ambiguities which prevent communication, acceptance of social responsibility for the physically, mentally, economically or culturally different, the equalization of political and economic power, leadership which protects minority values in providing for the general welfare and the management of conflicting values, and the broad distribution of technical and scientific content and skills.

Ralph Tyler, Science Research Associates, will describe the social effects of education, as currently institutionalized in curriculum objectives and materials, and methods of presenting ideas and experiences and of evaluating them. Extending his previously stated view that the diversity produced by recent curriculum reform has produced mostly trivial reforms, Tyler will suggest that possible and/or normative directions of curriculum include real alternatives involving new objectives, new subject matter, a new type of teacher and student, and modifications in classroom, single school, and district wide social systems, as well as in community-school interaction patterns involving control of attendance, management, and instruction methodology and substance.

Donald Oliver, of Harvard University, will present the view that an important social purpose of education is the building of tolerance for diversity, community, and social responsibility through the development of alternate social structures deliberately planned around patterns of behavior which facilitate and support those values. Essential to the social education built into these new structures is empathic interaction with individuals and groups traditionally considered outsiders and rejects (the aged, the stupid, the emotional, the foreign, the unknown, the ill, and other low status groups such as blacks, women, the Spanish-speaking American, and children) which leads to the acceptance of responsibility for the welfare of all.

Elliot Eisner, Stanford University, will examine some of the means by which schools may serve man's need to solve species-wide problems in the present and in the future. Can the educational system, with its traditionally parochial view of its proper function, have an effect on the world views of children and adolescents? In dealing with this question some of the work that Kohlberg and Piaget have done on the moral development of the child will be examined. Some programs that have been designed to enable students to view human problems from a mankind perspective will then be described and their salient features analyzed. Following this analysis, particular features of the humanities, especially the languages of the arts, will be described as resources which can enable students to participate vicariously, and thus know empathetically, what the problems of man are outside their own immediate culture. Such social understanding may permit these learners, when adult, to cope with human problems as general within an interacting, interdependent system, rather than as specific to their own country and time.

Robert Leestma, Office of Education, will discuss the importance of intercultural studies for the general education of every learner in today's world. School-taught interaction skills for communication between varying cultural groups and information-processing techniques for the accurate interpretation of the cultural meanings of cues facilitate conflict management and productive and humane interaction within a context of wide individual and group diversity. Educational experience in the field, both extra-nationally and among American subcultures, will develop awareness of mankind as culturally plural and manifold, as well as a single species on a single planet. It is the task of intercultural education to modify patterns of interpersonal, intercultural, and international behavior. Rather than cultural transmission, cultural transaction in which each group learns from the others in the course of interaction is the goal of such education.

Paul Bohannan, Northwestern University, will develop the theme that two types of culture are dominant in the world today and that it is the social responsibility of educational systems to prepare individuals to live in both of them. These cultures have been referred to as a "superculture" and a "local culture". Bohannan conceptualizes them as two distinct parts of an overall or "two-story" culture. The microculture is the downstairs culture; the macroculture is above. The latter encompasses such things as accepted bodies of knowledge, especially scientific and technical knowledge, and many aspects of economic and political power. Macroculture revolves around power. Microcultures, on the other hand, are based on intimacy and the close sharing that typifies face-to-face small groups. The educational problem is finding ways to show members of each group that the stairs are there and that they may, if they wish, learn to negotiate the distance between the two floors. The social function of the schools, then, is the development of the capacity to function in a two-dimensional culture in which 1) the individual is free within close communal groups to develop the full range of his uniqueness and those of his groups, and 2) the individual learns to negotiate the common values of the larger cosmopolitan world in economic and political transactions.

James MacGregor Burns, Williams College, will consider from the historian's perspective, those patterns of education which function to socialize learners into the political system, developing in some individuals the essential qualities of leadership and, in all, specific attitudes toward leaders, leadership, and authority. The meaning of the concepts of authority, power, and justice in an egalitarian society and the school's role in transmitting those concepts will be examined.

Elizabeth Léonie Simpson of the University of Southern California will examine the need for educational systems whose basic functions include facilitation of empathy (social imagination and responsiveness) and the development of particular concepts of justice, equality, and authority in learners. Can the meaning of human brotherhood or equality be taught in operational terms in a world of great individual and group variation where difference has usually been interpreted as inferiority? Ms. Simpson will conclude with a discussion of the social value of diversity and the responsibility of the schools to maintain differences and utilize them to the enrichment of all.

34.03 EVALUATING EVALUATION IN EARLY CHILDHOOD EDUCATION PROGRAMS (B, SYMPOSIUM)

WILLIAM L. GOODWIN, University of Colorado, Organizer

The objectives of the symposium are as follows: (1) to contrast the evaluation philosophies of early childhood educators of different persuasions; (2) to review the evaluation strategies being used in a spectrum of early childhood education programs; (3) to contrast the types of measures considered important by early childhood educators of different persuasions; and (4) to examine evaluation philosophies, strategies, and measures of early childhood education programs in light of national program and evaluation efforts.

The importance of this topic to the educational community is twofold. First, within the area of early childhood education, there are distinct philosophies regarding how best to nurture and facilitate the child's development and acquisition of behaviors. These distinct philosophies ultimately result in operational programs that are substantially different in focus. How to adequately and fairly evaluate such programs, on both comparative and intra-program bases, is a continuing, only partially-resolved problem. Second, the national effort in early childhood education needs to determine priorities for channeling and expending its resources. With additional societal emphasis highly likely in day care, preschool, or other early childhood education programs, it is appropriate to re-examine the interface between such programs and evaluation.

"Program Development and Evaluation Emphasizing Full Program Characterization" will be presented by Thomas J. Johnson, National Program on Early Childhood Education, CEMREL, Inc. An educational program at any age level is a configuration of elements designed to effect a specific set of educational, vocational, or developmental outcomes. The components or elements that are developed through R&D can be conceived as a set of regulating variables which are mediated or maintained by the products (i.e., books, toys, guidelines, etc.) which comprise them.

Full program evaluation requires specification of (1) the major and minor regulating variables contained in the separable components of a program, (2) the multivariate set of child outcomes each component is designed to effect, and (3) the logical, theoretical, or empirical rationale connecting (1) to (2). Program evaluation for well characterized programs requires more complex mathematical models, sampling design, and statistical analyses for the composite set of causal relationships.

Philip H. Sorensen, Stanford Research Institute, will speak on "Conflicts Affecting Design, Analysis, Interpretations, and Reporting in the National Follow Through Evaluation." Congress authorized Follow Through in 1967 under the Economic Opportunity Act to provide developmental and educational services for poor children in primary grades who had experienced Head Start or equivalent preschool. A large scale service program was envisioned originally. Appropriations were not sufficient, however, so Follow Through was re-cast as an R&D program. The differences between these different

concepts have affected both the implementation and assessment of the program.

The following pairs of somewhat opposed orientations will be discussed to illustrate the consequences of one view or another on feasible evaluation designs, appropriate analyses, and justifiable interpretations: (1) Follow Through as a service-oriented compensatory program or a research-oriented experiment, (2) analyses directed to policy issues or theoretical questions, (3) evaluation addressed to formative or summative assessment, (4) program success defined by general or specific criteria, and (5) frequent reports of tendencies of deferred reports of more stable findings.

"Responsive Evaluation" will be the topic of Margaret de Rivera, Educational Development Corporation. Evaluation activities should always be considered in terms of the effect that they have on the persons or programs that are being evaluated. This seems a particularly critical concept when young children are being evaluated. Evaluation should be of some value to the persons or programs being evaluated. For example, if a Follow Through program is being evaluated in a community, persons in the community should be assisted in developing evaluation skills so that they can conduct evaluative activities of high import to them. In other words, every evaluation should be evaluated in terms of its effects on the individuals or programs being evaluated. Measures commonly used to measure outcomes in early childhood programs are conceived too narrowly and place artificial constraints on naturalness and spontaneity.

David L. Wickens, Bank Street College of Education, will present a paper entitled "Evaluation in 'Open' Classroom Programs." The success of educational programs is often determined by the coincidence of the testing instruments with instructional procedures and program content rather than by the actual performance of adults and children in the classroom situation. Standardized achievement tests, which are the principal instruments used for assessing program effects, present particular disadvantages for open classroom models because of the sequence of skill development implied in the test format, the construction of items, and the content of the items. These instruments and others available do not tap the major objectives of open classroom programs. The roster of objectives for open educational programs include several in the areas of socialization and problem solving which are central to the dynamics of the program, but, at present, do not allow for the establishment of specific measures of program effects.

A description of the interaction of elements within an open classroom model will be presented as a total system in which the assessment of process assumes a more important function than assessment of products represented by the concept underlying standardized achievement tests. Dimensions which show promise for assessment of program effects in an open system will also be discussed.

"The Importance of Behavioral Analysis in Early Childhood Classrooms" will be discussed by Don Bushell, University of Kansas. Behavioral analysis and exact specification of desired child behaviors permit three operations to occur in early childhood education programs that are critical. First, exact specification permits the adult working with the child to identify and reinforce the desired behavior when it occurs. Second, it is possible to train adults to facilitate the learning of the child by helping him develop behavior modification skills. Third, exact specifications of child behaviors serve as directional guides in selecting and/or developing curriculum materials and activities for use in the classroom. Development of appropriate measures can be initiated and progress in constructing them can occur to the extent that the behavior that is to be measured can be specifically defined. Similarly, this program of working with young children can move children rapidly toward well-defined behavioral outcomes.

Robert L. Spaulding, California State University, San Jose, will speak on "Evaluation of Programs in Early Childhood Education Using Coping Styles as Dependent Variables." The goals of early childhood educators are commonly expressed in terms of social and intellectual development. The Coping Analysis Schedule for Education Settings (CASES) is designed to measure social development. Its use in programs designed to increase social skills and coping ability in the school environment is described. The presentation will include discussion of performance criteria, CASES categories, relationships of CASES categories to dimensions of personality derived from ego theory, CASES Styles reflecting personality types, methods of training observers, observer reliability, data gathering procedures, data processing, results of validity studies, and program evaluation using CASES behavior style coefficients as dependent variables.

34.04 BLACK EDUCATORS IN EDUCATIONAL ADMINISTRATION (A)

A Comparative Study of the Philadelphia Leadership Program for Inner-City School Administrators at The Pennsylvania State University

EUGENE J. RICHARDSON, JR., The Pennsylvania State University

Students are generally admitted to graduate schools on the basis of academic criteria. These criteria frequently bar minority group students with high potential in educational administration. This study was conducted to measure the performance of minority group students admitted to graduate programs through non academic criteria. The study analyzed graduate grade point averages, Graduate Record Examination Scores, Miller Analogies Scores, retention in the program, and career growth rate. The minority groups in the study were in the Philadelphia Leadership Program. They were compared to an equal number of randomly selected students who were admitted through academic criteria. No significant difference was found between the groups.

The Black Plateau

DONALD E. ROUSE, The Pennsylvania State University

Most Black educators seldom rise above the rank of principal. This is known as "The Black Plateau." Through the use of participant observation, informal interview and review of certain formal documents, this phenomenon was investigated. Aspirational levels, system road blocks, formal and informal routes, and job attainment were of major concern. The study spells out the reasons why a Black Plateau exists in the urban school district. The reaction that Black educators are not prepared to move above the principalship is dispelled and a model for attainment of Black educators is offered.

Elementary Administrators Role Perceptions Related to Assessment of Community Power

WILLIAM H. HARRIS, The Pennsylvania State University

The objective of this study was to examine whether or not the urban elementary school administrator's assessment of the community's ability to reward or punish is a significant factor in his perception of his own role performance, his leadership style, and his work with the community and its organizations. Data were collected by the survey-statistical technique using: (1) the *Principals Profile*, and (2) the *School Community Resources and Assessment Form*. The study was conducted in the Philadelphia, Pennsylvania School District. The data indicate that there are differences in leadership style, community workmanship, and role performance of principals in communities viewed as high power (able to reward or punish) as opposed to those viewed as not.

The Role Expectations of The Black Principal as Perceived by Himself, Other Black Administrators, Influentials, and Other Community Persons

ROBERT CHAPMAN, The Pennsylvania State University

This study examined the role perceptions for the Black urban principal. A sociological survey using questionnaires was employed. Principals, influentials, and community members were interviewed. The sample included 15% elementary principals, 25% secondary principals, all Black administrators above principal, two Black city council and two school board members as well as presidents of agencies serving Blacks (i.e., urban coalition). Conclusions generally indicate a more assertive role on the part of the Black principal would be welcomed. Further, Black principals are generally found in predominately Black schools. Black administrators and influentials hold higher expectations for the principal than he holds for himself.

34.05 SCHOOLS WITHOUT FAILURE: CASE STUDIES OF FOUR SCHOOL SYSTEMS WHICH HAVE EXPERIMENTED WITH THE GLASSER APPROACH (C, SYMPOSIUM)

BRUCE D. KEEPES, Palo Alto (Ca) Unified School District, Organizer

The preschool-age child lives in an environment largely devoid of labels, scoring categories, or other classification systems, allowing him to develop according to standards set by himself. In such an environment there is no such thing as a "failure." Everyday life experiences have no structures for pinning labels on individuals; they have no set standards to be met; they do not prescribe particular forms of thinking or select arbitrarily what is to be "learned" or committed to memory. The child, when he enters school, has spent five years exploring his surroundings,' learning about them by solving the problems and questions which his environment poses, conducting inquiry into matters relevant to his own life. He has been more or less successful in these endeavors, depending on his home environment and the encouragement he receives from it, but it is through thinking, problem solving, and dealing with matters relevant to his life that he has learned as much as he has. No one has ever labeled him a failure, for he has succeeded in doing all of the things which he set out to do, at varying levels of achievement: he *did* learn to button his jacket; he *did* find out what happens when a match is lit to paper. It was difficult at first, but he did learn what happens when he gets off a teeter-totter too soon. He would never consider himself a failure, and is quite confident that he is capable of success.

It is in this optimistic framework, maintains William Glasser in his book, *Schools Without Failure* (New York: Harper & Row, 1969), that most children begin their schooling experience: "Very few children come to school failures, none come labeled failures" (p. 26). Yet the pervading school mores (based greatly on the expectations inherent in the normal curve) seem to demand that a certain percentage of children fall at the low end of the line. And so, a certain proportion *do* "fail." The teachers are not surprised—they *expect* a certain percentage of failure. The tragedy is that after a period of acculturation, the *pupils* are not surprised either—they become accustomed to being labeled, and grouped, even to the extent of being identified as "failures."

For those who are identified as failures, the non rewarding nature of their continuing experience with failure effectively lowers their motivation. If memorizing facts (a mental function which had little relevance for them before they came to school) seemed irrelevant at first, it seems doubly so even a little later, when it becomes apparent that the chances of succeeding are so clearly diminished. And the school, itself, becomes more irrelevant than before. Yet the children are obliged to enter into this environment every day; in defense against an environment which is clearly hostile to their interest, they withdraw, or they may break out into delinquent or otherwise aggressive behavior. "And delinquency and withdrawal lead to a failure identity" (p. 15). Children who experience failure early in school lock into a cycle of failure which becomes increasingly difficult to escape. It becomes difficult to expect success in any realm of life.

It is this kind of schooling experience, according to Glasser's model, which is the primary cause of failure in children; the "Glasser approach" is an attempt to correct the deadening effect which this experience has on so many children. Glasser built his alternative, a "School Without Failure," on (1) an analysis of what children need in order to achieve a successful identity, and (2) an examination of what school often does to children to teach them failure.

The symposium will include a presentation of the theories and approaches advocated by Dr. Glasser and reports on four studies of the Glasser approach completed in school systems operating under widely varying conditions at four different locations across the nation. Each of these studies represents a model of an approach to research which was taken in response to a specific set of conditions in an operating field setting.

At one extreme the research design arose from a situation which was almost ideal; the researchers were involved from the introduction of the concept to the district, and were given considerable control over the way the Schools Without Failure approach was introduced. The superintendent of this medium sized urban school system invited the researchers to listen to presentations regarding Schools Without Failure which were being made to the teachers and to the community. The researchers then developed an experimental design based on the various conditions which they saw, and took their design back to the professional staff within the district to ascertain whether or not the design was, in fact, directed towards the objectives which they were trying to achieve through the initiation of the Schools Without Failure approach in the district. After some modification the research design and criterion measures were agreed on and the district provided funds to establish five schools under the Schools Without Failure approach and to examine the changes brought about. The researchers selected ten schools, matched them, and then from each of the matched pairs selected one ($N = 5$) randomly to be the experimental school. The research involved collection of pre- and posttest data, and a comprehensive analysis, including the interactions, of the effects of the program in both the affective and cognitive domains on the community, school, teachers, and students. Needless to say, this provides an ideal model for field research on the introduction of a new program.

At the other extreme, the researcher was not involved until well after the program had begun; further, this project was not indicated as being one with a very high priority. The researcher, therefore, set about collecting only minimal data, primarily through questionnaires of the teachers and some objective measurements. Suddenly, the researcher found that the project was far more important to a number of diverse groups within the community and district than had originally been indicated; the problems that then faced the researcher were those of trying to develop an omnibus report based on analysis of data which were either rather hastily collected or collected after the fact.

As indicated above, it is hoped that this symposium will achieve two objectives: a presentation of the theories advocated for education by Dr. William Glasser, and alternative models for research in field settings. The development of these field models becomes increasingly significant on the educational scene as accountability becomes more and more prevalent. Likewise, the infusion of new approaches such as those advocated by Dr. Glasser promise hope for involving a child in a personal way in his daily school experiences, and in an environment in which he feels responsible for, and committed to, his own learning.

34.07 CHICANO SELF-CONCEPT, VALUES AND CLASSROOM INTERACTION (G)

Family Socialization and Educational Achievement in Two Cultures: Mexican-American and Anglo-American

JAMES G. ANDERSON, Purdue University, and FRANCIS B. EVANS, University of Wisconsin, Green Bay

This study examined variations in family socialization practices among Mexican-American and Anglo-American students, and the effect

of these practices on achievement values, self-concept, and achievement. Path models were constructed and their parameters estimated from data from a sample of 102 junior high school students. Results of the analysis suggest that direct attempts to encourage greater academic effort on the part of the student may actually inhibit achievement. In contrast, parental independence training results in significant gains in achievement among both groups of students. This is accomplished by increasing the student's confidence in coping with his physical and social environment, especially the classroom where students are expected to perform independently.

Changes in Attitudes and Values of Adolescents from Different Cultural Groups during the High School Years

F. DAGENAIS, University of California, Berkeley

Thirty-one Omnibus Personality Inventory items longitudinally administered to 30,000 high school students in the ninth- and 12th-grades were analyzed. A sample of 1,800 students representative of ten race-ethnic-religious groups was drawn and analyzed. Results indicate that for certain items (1) the group mean opinion ranges over 40 to 60 percentage points on both grades, (2) there are significant changes in group mean agreement over the years (McNemar test), and (3) although most groups change significantly and all groups change in the same direction, the groups do not change *relative* to one another over the years (Kendall's *tau*).

Mexican-American Self-Concept and Educational Achievement: The Effects of Ethnic Isolation and Socio-Economic Deprivation

LAWRENCE G. FELICE, Baylor University

Ethnic and socio-economic isolation of Mexican-American youth in public schools is now being recognized for the devastating effect it has on educational development. The purpose of this study was to evaluate the relative importance of school socio-economic and racial-ethnic context for Mexican-American student achievement and dropout behavior. Data were also included for Anglo and Negro students. Regression analysis was utilized to identify the crucial determinants of each type of educational achievement within each racial and ethnic group. Findings from this study present necessary data for the development of realistic and balanced strategies in the struggle to provide an equal educational opportunity for Mexican-Americans.

The Equality of Educational Opportunity within Ethnically Mixed Classrooms

GREGG JACKSON, and CECILIA COSCA, U. S. Commission on Civil Rights

Some aspects of the equality of educational opportunity afforded students of different ethnic groups within the classroom setting were studied. Observers visited 494 classrooms. They used a slightly modified Flanders interaction coding system to code teacher verbal behaviors with reference to the ethnicity of the student to whom each behavior was directed. The results indicate a number of statistically significant, substantial, and pedagogically important disparities in the teacher behaviors that are directed toward students of different ethnic groups. Twenty-one teacher, student classroom, and school characteristics were also investigated for their possible association with these disparities.

34.09 WORKING MODEL OF A COMPETENCY-BASED TEACHER EDUCATION SYSTEM (C, EXPERIMENTAL)

JASON MILLMAN, Cornell University, Chairman

Fred S. Cook, Wayne State University, describes the instructional aspect and the management information aspect of the teacher education system. The discussion revolves around an explanation of the principles upon which the model is based, a description of the model itself, and an explanation of the developmental processes used to bring the system into fruition. The presentation is a standardized mediated presentation using audio-slide and group discussion techniques. The Wayne State program of competency-based teacher education is unique in several respects.

34.11 RESEARCH-BASED MODELS FOR TRAINING TEACHERS OF HANDICAPPED CHILDREN (C, SYMPOSIUM)

GLORIA F. WOLINSKY, Hunter College, The City University of New York, Organizer

The major objective of this symposium is to describe three different models for training teachers of handicapped children. The complexity of the instructional situation in so far as handicapped children are concerned is compounded by methodological, institutional and diagnostic problems. Whatever the problems, however, the ultimate aim of all teacher training programs is to prepare teachers to cope with these contingencies in order to best meet the educational needs of handicapped children. The three different approaches to teacher programs that will be discussed arose out of institutional and community needs. They reflect concern with the relevance and the appropriateness of experiences for prospective teachers and are designed to provide a continual evaluation of the content and progress of each student in the program. It is anticipated that aspects of those programs can be replicated by other institutions of higher education.

"Research-Based Feedback Model for Training Teachers of Preschool Handicapped Children" will be presented by Ernest Gotts, University of Texas at Austin. The objective is to describe an individualized research-based teacher training model in early childhood education for handicapped children which focuses on systematic observation and feedback for the trainee and for the trainer.

How can teacher training programs collect valid information during training regarding the probable effectiveness of trainees in real-life situations? Answers have been sought in the following ways. Practical classroom and classroom related experiences have been integrated with the acquisition of theoretical knowledge of child development, development deviations, systematic assessment techniques, and appropriate learning environments. Available research-based information about teaching skills such as probing, listening, cueing, and feedback procedures has been utilized to provide trainees with cues for assessing their own and their peers' performance in classroom interactions. Videotaped sequences have been reviewed for self, peer, and supervisor feedback (or any combination thereof) purposes. Observation and recording of the teaching process, according to the codes of a structured observation system, provide data for continuous assessment of children's progress in the classroom and for trainees' skill development, effecting an objective evaluation of the program.

Alice H. Hayden, University of Washington, will speak on "A Child Development, Behavior Modification Research, and Data-Based Model for Training Teachers of Handicapped Children." What specific initiating and responding behaviors do effective teachers exhibit? How do teachers know children are learning, developing? The answers require direct observation and measurement of both children's and teachers' specific responses. A major first step in training pre-school professionals, paraprofessionals, ancillary personnel, volunteers, and parents is training in data-taking, graphing, analysis, and interpretation. Such skills permit continuous assessment of children's progress and teacher-response effectiveness. Teacher-trainers need ongoing data on trainees' interactions with children. Analyzing these data with trainees informs trainers about teacher-training effectiveness and objectively evaluates

teacher and child progress. It also teaches accountability which is too seldom taught in teacher training.

"Alternate Strategies of Preparing Teachers of Preschool Handicapped," presented by Gloria F. Wolinsky, Hunter College, will demonstrate a model of alternate strategies of preparing teachers of the preschool multiply handicapped. The model is based on joint community (agency) and college planning, a competency based approach to didactic and field experience, and the assumption that professional education in this area is part of a continuum of experiences. The procedures used are: (1) a formalized approach to Agency-College cooperation, that will encourage mutual assistance and responsibility in the professional preparation of these teachers; (2) the development, evaluation, and refinement of competencies based on a modular, individualized approach to instruction; (3) the development and evaluation of a continuum of experiences to include preprofessional, paraprofessional, and continuing education approaches; (4) the development and maintenance of a system of professional communication concerning the problems and issues involved in professional preparation in the area of the preschool handicapped. It is anticipated that the model can be used by other institutions as a guide for developing additional programs and will demonstrate the effectiveness of joint planning and responsibility relative to the continuum of experiences in preparing teachers of the preschool handicapped.

34.14 MICROTEACHING I: STUDIES RELATING TO SUPERVISOR AND TEACHER BEHAVIOR (C)

Predictors of Supervisor-Teacher Conference Interaction

ALICE DOZIER DARR, University of Akron

The purposes of this study were: (1) to provide an objective description of the supervisor-teacher conference behavior in a microteaching situation, (2) to determine the combinations of teacher and supervisor characteristics which predict conference behavior and conference effectiveness, (3) to determine the supervisor characteristics which predict supervisors who change their behavior toward a more indirect and supportive conference. Test results, along with conference data and personal data, were used as supervisor and teacher variables for the statistical analysis. Through the use of the multiple regression technique, full and restricted models were tested to determine significant predictor sets.

Microteaching—A Study in Specific and General Behavior of Supervisors

JOAN DUFF KISE, Kent State University

This study examined supervisory behavior in a conference situation and its relationship to changing teacher behavior. The main purpose of the study was to determine whether specific or general supervisory behavior produced more changes from the teach to reteach cycle of microteaching. Videotapes of the conferences and reteach sessions were analyzed to find the changes agreed upon in the supervisory conferences and those implemented in the reteach. As a group, the supervisors who utilized specific supportive behavior produced significantly more change in the teacher behavior of the reteach cycle of microteaching.

Examination of Participation and Order Effects in Feedback Interviews

JOE M. HILLERY, University of Akron

Sixteen teachers in microteaching sessions were supervised using four different techniques: non-directive interview with the supervisor offering no suggestions, but with the interviewee encouraged to analyze and evaluate his performance; three directive interviews in which the supervisor gave two effective and two ineffective behaviors in three different sequences: (1) ineffective, effective; (2) effective, ineffective; (3) "sandwich technique"—effective, ineffective, effective. Analysis of variance and covariance was used to examine order effects, self-esteem, and their interaction. A correlational comparison was made of the teachers' self-evaluation and performance change and satisfaction with the interview.

Effects of Microteaching on Self-Concept of Teachers and Supervisors

BARBARA BARDEN, North Middle School, Norton, Ohio

Both teachers and supervisors react strongly to viewing themselves in videotaped microteaching sessions. This study was carried out to investigate whether microteaching significantly affected the self-concept of teachers and supervisors. A semantic differential scale for teachers was administered to two sections of undergraduates. One section had five microteaching sessions, and the other had none. The scale for supervisors was given to two graduate classes. One class participated in five microteaching experiences, and the other served as the control. Discrepancy scores for the pre- and posttests were computed. Factor analysis was sued for comparison between and within groups.

34.17 VERBAL LEARNING (C)

Effects of Age, Form Class, and Word Frequency on Word Associations

GARY M. INGERSOLL and DEBORAH FELKIN, Indiana University

Second-grade and sixth-grade children and adults were presented with a word association task originally used by Brown and Berko. That study was repeated with the addition of word frequency as an independent variable. The results indicate that the frequency of a stimulus word accounts for a portion of the variance of heterogeneous or homogeneous responses. The results further suggest that adults under a low frequency condition respond in a similar fashion to second-grade children under a high frequency condition.

Concreteness and Imagery in Sentence Meaning, Revisited

KATHY PEZDEK and JAMES M. ROYER, University of Massachusetts

The purpose of the present study was to assess the effect of comprehension on the recognition of meaning changes of abstract and concrete sentences. Embedding sentences in contextual paragraphs to encourage comprehension resulted in increasing the recognition for meaning changes of abstract sentences to the level of being nonsignificantly different from the rate for concrete sentences. Paivio and his colleagues have proposed that sentence concreteness per se is an important variable which determines how sentences are stored in memory. The result of the present study, i.e., that the comprehension task functioned to minimize the effect of concreteness, raises doubt about this hypothesis.

Output Processes in the Learning of Verbal Materials

JAMES F. VOSS, University of Pittsburgh

This research is concerned with the role of output processes in learning. The paired-associate and prose learning procedures were employed. The major findings indicate: (1) acquisition without testing is limited to about 60-70% level, (2) learning-to-learn is related to level-of-mastery rather than to practice per se, and (3) this effect may be a function of output processes. Prose learning results indicate that repeated readings of a passage improves comprehension only slightly

unless testing takes place, and testing and re-reading provide ways to structure prior input. The findings are related to storage and retrieval mechanisms and to the influence of output upon comprehension.

Effects of Prose Organization and Phrasing of Sentences and Learning Objectives upon the Retention and Integration of Categorical Information

LAWRENCE T. FRASE, Bell Laboratories

Ninety-six adults learned four attributes of four ships in three recall trials. A prompted recall test followed Trial 3. The information was clustered by name (Group N) or by attribute (Group A). Sentence structure emphasized the names or attributes, and names or attributes were fully stated in the learning objectives. Compatibility between paragraph and sentence emphasis increased recall accuracy. Stating the attributes in objectives unexpectedly depressed recall accuracy for Group A. Group A Ss, with perfect recall of the text, scored low on prompted recall items that required integrating the attributes of a particular ship.

34.20 THE ELEMENTARY SCHOOL ENVIRONMENT (B)

An Investigation of the Dimensions of the Elementary School Environment through Factor Analysis of Beta Press

DAVID SADKER, University of Wisconsin, Parkside

The objectives of this investigation were: (1) to identify the dimensions of the elementary school environment, and (2) to compare this investigation with the procedures and findings of Pace at the college level. An instrument based on Pace's work and consisting of 80 statements about school life was administered to 5,412 students in 54 elementary schools in Massachusetts. The student responses were translated into school scores. These scores were then subjected to a factor analysis and rotated along oblique axis. The analysis identified six environmental dimensions: (1) humanism (respect for individual rights), (2) alienation, (3) opportunism (political maneuvering), (4) morale, (5) autonomy (student independence), and (6) resources (availability of earning resources).

The Elementary School Environment: Perceptions of Students and Teachers

JON SCOTT BENDER, Madison College

The purpose of this study was to compare student and teacher perception of the educational environment. The Elementary School Environment Survey (ESES) was used to assess the perceptions of fifth and sixth grade students in 36 elementary schools on six variables: alienation, humanism, autonomy, morals, opportunism and resource. Analysis of variance techniques was used to determine differences both within schools and across schools for each ESES variable. Significant differences were found within schools and across schools on five variables. Teachers consistently generated scores in a more favorable direction than students. In addition, profiles across schools within variables revealed patterns.

Principals, Teachers, and Elementary Youth: A Study of the Relationships between Selected Variables of Teacher-Principal Social Interaction and Six Features of the Educational Environment

A. BRUCE McKAY, Montgomery County Public Schools

The central purpose of this study was to examine selected features of principal and teacher behavior in relation to six educational environment variables of elementary schools. Using subtests of Halpin's Organizational Climate Description Questionnaire and Sinclair and Sadker's Elementary School Environment Survey, responses were obtained from 4,105 fifth and sixth grade students and 627 teachers in 36 Massachusetts and Pennsylvania schools. Analysis employed canonical and Pearson product-moment correlations, with the findings supporting the contention that the behavior of teachers and principals is significantly related to selected components of the educational environment.

Actualities of Individualisation in British Primary Schools

A. START, K. B. START, B. K. WELLS, Southlands College of Education

To provide effective individualised instruction the teacher must be aware of the individual child's ability, achievement and needs. If mixed ability classes are standard, then the knowledge of the range of ability that can be expected is essential, especially if class, group or other non individualised methods are used. A recent survey of reading standards of 11 and 15 year-old children suggests that a range of seven years exists between the 10th and 90th percentile. The range commonly referred to in teaching is much less and the implications for the teachers and the children are discussed.

35.02 INNOVATIVE APPROACHES TO CURRICULUM

Development and Evaluation of One Strategy for Implementing Change in Schools

KENNETH A. LEITHWOOD and HOWARD R. RUSSELL, Ontario Institute For Studies in Education

A significant cause of wasted educational resources in the past, and at present, has been the disproportionate amount of effort focused on the development of educational products and the too little effort devoted to the problem of how these products can be implemented in practical school settings. In the context of present education, the implementation problem seems to be a superordinate problem with development a part of it. The authors describe and analyze a specific strategy for implementing change in schools derived from a generalized change model which potentially suggests a number of alternative strategies. The strategy described involved program development and evaluation in 48 secondary and elementary schools.

What Is a Normative Basis for Curriculum Research?

ERIC R. STRAUMANIS, University of Maryland

This study undertakes to clarify the concept of a normative basis for curriculum research by considering four possible interpretations. It is held that a normative basis can be: (1) a set of substantive moral principles simply, or (2) such a set taken as an integral part of a putative curriculum theory, or (3) a meta-strategy governing curriculum decision-making, or (4) the norms which specify the kinds of terms that may be used in stating research hypotheses. None of these turns out to be fully satisfactory for curriculum research though (3) and (4), with qualifications, seem more promising than (1) and (2).

Curriculum Criticism and Literary Criticism

GEORGE H. WILLIS, University of Rhode Island

The issues involved in considering a curriculum as a literary object and in considering thought about curriculum as curriculum criticism provide a major portion of the expanding conceptual basis for the theoretical models and the modes of practice which the curriculum field has adopted in recent years. This paper develops a conceptual

framework for understanding differing theoretical positions in literary criticism and applies this framework to analogous developments in the curriculum field. It thus provides a conceptual basis for analyzing the function and techniques of curriculum criticism and for investigating some aesthetic dimensions of curriculum practice.

35.03 PRE-SERVICE TEACHER EDUCATION EVALUATION (B)

Instructional Research within the First Year Communication Skills Program

BARAK ROSENSHINE, University of Illinois at Urbana

The paper attempts to illustrate the value of conducting research within a curriculum materials program to determine whether certain curriculum specific variables have a relationship with student gain. The results obtained from a small study (nine teachers) are discussed in terms of the hypotheses they generate for further studies on how the curriculum achieved its effects, and how the curriculum materials package might be improved.

Teacher Preparation and the Evaluation of the Conceptual Skills Kindergarden Program

ELLEN REGAN and KENNETH A. LEITHWOOD, Ontario Institute For Studies In Education

The process of program development and evaluation receives widespread attention in research and development institutions, but information as to processes generated as a result of practical experience in development and evaluation are not widely reported. This report outlines the ways in which teachers have been involved in the evaluation of program effectiveness, attempts to determine predictive indices of teacher effectiveness, assesses student achievement and student attitude in ways that have implications for practical evaluation in school settings. The report is a contribution of one of the program co-developers and an independent evaluator and represents four years experience with development and teacher preparation related to the program and three years experience in the evaluation of the program.

35.04 THE CURRICULUM: MORALS AND VALUES (B)

The Effects of Social Position, Race, and Sex on Work Values of Ninth-Grade Students

HOLLIE B. THOMAS, University of Illinois

This study investigated the effect of social class, race, and sex on the work values of ninth-grade students in a large metropolitan area. Measures of work values were obtained using Super's (1970) Work Values Inventory. Factorial analysis of variance and multiple range tests were employed to determine the differences between and among variables. Results indicated that the primary differences were for the dependent variables of race and sex. In general, black females of low social position scored low on the work values scales.

Propensity to Change Responses in a Delphi Round as a Function of Dogmatism

NORMAN W. MULGRAVE and ALEX J. DUCANIS, University of Pittsburgh

The Delphi Technique is a means of soliciting expert opinion which purports to reduce the influence of psychological factors upon the experts. When individuals with high dogmatism scores were compared to those with low scores, the high dogmatism group exhibited less change on those items where they could be considered expert. A second portion of the study investigated these variables in a face-to-face situation.

Psycho-social and Moral Elements in Curriculum Theory

WILLIAM F. PINAR, University of Rochester

This study, using a philosophical-logical mode of inquiry, generates a conceptual structure for further curriculum theorizing. Data for the structure are drawn from an analysis of the implications of Hampden-Turner's model for the process of psycho-social development and from Kohlberg's scale of levels of moral development. Curriculum phenomena described in terms of actors, artifacts and operations are subjected to the new conceptual mapping, and from this analysis, two major curriculum design components are identified – the nuclear component and the cortical component. Implications for field testing in the preactive realm of curriculum planning are delineated.

35.05 COLLEGIATE PLACEMENT AND CREDIT POLICIES: ISSUES AND EXPERIENCES (A, SYMPOSIUM)

RONALD L. FLAUGHER, Educational Testing Service, Organizer

Most colleges and universities of the country are experiencing increased pressure to deal with the questions of placement, awarding of credit, and demonstration of proficiency. However, very little communication or comparison of solutions seems to have occurred among the institutions. This symposium will attempt to initiate some airing of the issues, drawing on the diverse viewpoints of two on-campus practitioners, the director of a national placement test program, and an educational research psychologist. Difficulties and controversies exist around a number of topics which will be touched upon in the papers and subsequent discussion, e.g., when should placement alone be used and when should credit be awarded; are there benefits obtained from instruction which are not demonstrable through examinations; are institutional goals served but departmental goals threatened by some practices; what methodology can be adopted to determine that correct placement decisions have been made; how does such a placement program alter the nature and meaning of the college degree?

"Establishing Placement and Credit Policies at Colleges and Universities" will be discussed by Carl H. Haag, Director, College Board Placement Test Programs, Educational Testing Service. Many institutions are reexamining their policies and practices related to advanced standing, credit, placement, and exemption. The reasons for the growing interest in the assessment of nontraditional learning are explored. There are traditional practices which both support and clash with the new trends. A philosophical foundation for establishing placement and credit policies is suggested and an approach which an institution can use to develop systematic placement procedures presented. While the major focus is on constructing the components of an institutional placement and credit system—how tests can be selected, validity studies undertaken, and students appropriately involved in the placement process—, attention is also paid to academic, admissions, and financial considerations faced by colleges and universities.

"Techniques and Contributions of the System at University of Illinois" is the topic to be discussed by Lawrence M. Aleamoni, Measurement and Research Division, Office of Instructural Resources, University of Illinois. A description of the development and implementation of the University of Illinois Placement and Proficiency System will be given. Special emphasis will be placed on how examinations are selected or constructed and then validated within the appropriate courses. Considerations as to whether or not placement and proficiency credit should be determined by the same examination will be explored. The advantages of placing this type of data into the hands of the student, advisor, department, and college will be discussed. Finally, the

long term benefits of granting credit and appropriate placement will be discussed in light of the student's tenure and the university's programs.

H. Paul Kelley, Measurement & Education Center, University of Texas At Austin, will present a paper entitled "Establishing Credit-by-Examination Policies at the University of Texas at Austin." Each year about 3,000 UT Austin students earn more than 21,000 semester hours of credit by examination. Tests used include CEEB Achievement Tests and Advanced Placement Examinations, CLEP General and Subject Examinations, and local placement tests. Academic departments determine policies concerning tests used and minimum scores required. The Measurement and Evaluation Center coordinates all credit-by-examination programs. Several procedures are illustrated: 1) making the choice between two tests; 2) determining minimum scores for placement out of a one-semester course, or both semesters of a two-course sequence, 3) using a follow-up study to decide whether the correct minimum score had been chosen, and 4) using a test which yields two part-scores for placement determination in a five-course sequence.

"Research on the Controversies Surrounding Placement and Proficiency Systems" will be discussed by Ronald L. Flaugher, Research Psychologist, Educational Testing Service. The few empirical studies on placement and proficiency results all show positive effects, yet implementation lags far behind potential. Perhaps the reasons for this gap should themselves be the subject of more intensive research. Research could also advance our understanding of several other topics such as the effects of time interval between the course and the proficiency demonstration, and the effects on grade point average of high or low placement. Less easily researchable, but perhaps more crucial, are questions of the economic impact on the college and department, and determination of the benefits of instruction that are not measurable by objective examinations.

35.07 ORGANIZATIONAL STRUCTURE & CLIMATE: EFFECTS ON LEADERSHIP (A)

A Reappraisal of the Halpin-Croft Model of Organizational Climate

ANDREW E. HAYES, The University of North Carolina

This study serves as a basis for revisions of the Organizational Climate Description Questionnaire (OCDQ) and as the second part of a larger study in which the conceptual model of climate introduced by Halpin and Croft, and the OCDQ, will be revised. The purposes were (1) to determine the factor structure of the OCDQ when a large, national sample of data were subjected to the sophisticated factor-analytic procedures that have become available since the original Halpin-Croft study was conducted; and, (2) to identify "climate types" that are based upon the factor structure which was identified through the new analyses. Maximum-likelihood factor-analytic methods, with subsequent oblique rotations of the factor matrices, and taxonomic clustering procedures followed by multiple discriminant-analyses yielded factor solutions and climate types that differ from those which Halpin and Croft identified in their original climate study.

The Effect of the Elementary Principal's Rule Administration, Professional Leadership and Teacher Militancy

FRANK W. LUTZ and JOHN A. McDANNEL, The Pennsylvania State University

This study investigated the relationships between the elementary principal's use of rules, leadership perception by the staff, and teacher militancy. Utilizing Gouldner's model, principal rule administration was quantified in respect to punishment-centered, representative, and mock behavior. Hypotheses were tested using data from a random sample of 258 teachers in 25 elementary schools. The data supported significant relationships between a principal's use of rules and staff perception of his professional leadership. Representative use of rules correlated significantly with high professional leadership while other rule administration styles correlated significantly with low leadership. Militancy correlated positively with representative rule behavior.

35.08 RESPONSE IN STATE EDUCATIONAL FINANCE SYSTEMS TO SERRANO vs. PRIEST: CONNECTICUT, MASSACHUSETTS, MINNESOTA, and VIRGINIA (A, SYMPOSIUM)

MILTON D. JACOBSON and JOHN J. CALLAHAN, University of Virginia, Organizers

The objectives of this symposium are to investigate the impact of the *Serrano* decision on public educational finance systems in four States, all of which have undergone or are considering revisions to their present systems of educational finance. State finance programs and their revenue and expenditure characteristics were analyzed in these four areas, with particular attention being given to how fiscal equalization would be achieved in these States. Investigation of alternative modes of generating revenues and of distributing educational expenditures were postulated, and the redistributive character of such systems was analyzed. From such public finance analysis, alternative ways of meeting the fiscal neutrality dictates of *Serrano* in the future were presented. All four studies were part of an effort of the Research Division of the National Education Association to encourage more systematic and comprehensive approaches to educational finance reform.

"The Massachusetts Educational Finance System: The Impact of Equalized Expenditure," a paper by John J. Callahan, Advisory Commission on Intergovernmental Relations, and Felix Zollo, Massachusetts Teachers Association, will analyze the state-local fiscal system of Massachusetts to determine the impact resulting from the *Serrano* decision on educational finance. Present and prospective state, federal, and local roles in the school finance system were assessed. The school support by various revenue instruments was evaluated, and the extent of the non-public school system was considered. Factors resulting in increased educational expenditures were noted, and methods for resolving fiscal disparity problems were developed. Constitutional criteria were applied to the development of measures responsive to deficiencies in the revenue and expenditure of the school finance system. The productivity of alternative revenue sources was evaluated, and alternative funding plans were developed and evaluated, such as full state funding, state assumption with limited local supplement, a state-local-regional revenue system, and a true percentage equalizing formula.

William Wilken, Georgia State University, and Suzanne Taylor, Connecticut Education Association, will present a paper entitled "Connecticut and *Serrano*: The Dual Impact of Revenue and Expenditure Reform." Connecticut's school finance system has both grave expenditure and revenue problems. Revenue problems center on the matter of property tax relief, and excessive property taxation is at the heart of the state's educational disparity problem. A reform program was postulated that would permit Connecticut to resolve both problems. Revenue deficiencies were ameliorated through institution of a graduated state income tax, combined with a modest statewide property tax and a system of regional nonproperty taxation. The reform program was analyzed in the light of the "fiscal neutrality" dictates of *Serrano* and its strengths and weaknesses analyzed accordingly. In light of such strengths and weaknesses, future constitutionally sound plans such as a statewide voucher system were considered.

"Minnesota: Efforts to Respond to Political Challenge of *Serrano vs. Priest*" is the topic chosen by A. L. Gallop, Minnesota Education Association, and William Wilken, Georgia State University. Political

challenge to Minnesota's system of state-local funding of education has produced revisions in that system of educational finance, especially with regard to equalizing educational expenditures among local school systems. The effectiveness of actual and proposed revisions was analyzed in conjunction with a review of the state's system of raising educational revenues. Constitutional tests of fiscal equity were applied to the original and revised system, and evaluations of the success of the actual changes in attaining stated constitutional objectives were made. Analysis centered on designing future alternative modes of state-local finance of education that would meet present and potential constitutional tests of fiscal equity.

"The Virginia Educational System: Capacity for Response to *Serrano vs. Priest*" will be presented by William T. Harris, Robert McCarthy and Ramsay W. Selden of the University of Virginia. Two particular features of the Virginia educational system were analyzed in light of a present constitutional requisite for equalized educational funding. The Virginia Quality Standards for Education were analyzed as to their impact on equalization of educational spending throughout the state. Particular attention was given to requirements for improved school facilities and personnel as well as higher levels of mandated academic achievement. Secondly, the Virginia school financing system was evaluated for its existing deficiencies in revenue and expenditure matters, particularly with regard to fiscal disparities and local property tax reform. Potential remedies to these deficiencies were defined and analyzed, with many remedies being suggested from a statewide survey of school superintendents on the broad issue of educational finance reform in Virginia.

35.09 THE PRE-SCHOOL CHILD (C)

Learning Abilities of the Prekindergarten Child

LeORA CORDIS, University of Saskatchewan Regina Campus

The study analyzed the cognitive processes of prekindergarten children. Kindergarten Evaluation of Learning Potential, an instrument with behavioral objectives representative of learning levels, was used with 53 subjects 3½-4½ years of age. Significant differences were revealed between (1) boys and girls in associative learning, (2) children under and over four years in associative and conceptual learning, and (3) kindergarten and prekindergarten children in all levels of learning. This study indicates that, due to an accelerating ability to generalize, conceptualization of preacademic skills is significantly better established at four and one-half years than at four years.

A Comparison of the Didactic Interactions of Mothers and Fathers with their Preschool Children

JO LYNN CUNNINGHAM and ROBERT P. BOGER, Michigan State University

This study compared the interactions of mothers with those of fathers in an unstructured dyadic teaching situation in which each parent was paired individually with his preschool child. An unstructured setting with a standardized situation (teaching the child a two-dimensional sorting task) was used. The sessions were videotaped and subsequently rated with the Parent-Child Interaction Rating Procedure on dimensions of verbal communication, nonverbal communication, teaching procedures, and interaction process. A 2^4 design (social class x race x sex of child x sex of parent) was used, and multivariate analyses of covariance were performed to test the comparisons of interest.

Teaching Styles of Israeli Four-Year-Olds and Their Mothers: A Cross Cultural Comparison

NORMA D. FESHBACH, University of California, Los Angeles

The relationship between social class and patterns of reinforcement used by pre-school Israeli boys and girls and their mothers was investigated. Thirty lower and 30 middle class mothers instructed their own four-year-old in a simple task. These four-year-olds had previously taught a three-year-old a comparable task. Middle class children used significantly more positive reinforcements than did the lower class children. The middle class mothers used significantly more positive and significantly less negative reinforcement than did the lower class mothers. These Israeli findings provide a cross cultural consistency with social class relationships observed in American samples.

Developmental and Social Influences from Birth on School Readiness in a Metropolitan Cohort

THOMAS E. JORDAN, University of Missouri at St. Louis

Data from a prospective, longitudinal study of 1,000 infants born in 1966-67 in St. Louis city and county are reported. Twelve measures of child, maternal, and social factors were used as independent variables. Criterion measures were seven cognitive tests at ages two, three, four, and five years. Data were analyzed by means of multiple regression. All measures were obtained by individual testing. Results are reported for the measures by three groups and by individual predictor variables. Implication of the findings for educational strategies in the preschool and school entry years are discussed.

Color/Form Preferences as a Function of Nursery School Experiences and Age

CHRISTINE MADDEN, GLENN E. SNELBECKER, EDWARD MADDEN, and LOUISA SERAYDARIAN, Temple University

Color/form preferences were studied for three age groups of children who had had three different degrees of nursery school experiences. The only significant effect was the main effect, Nursery School ($F = 14.38$, $df = 2/45$, $p < .01$). A Tukey HSD indicated differences between nonschool and second year children and between those starting their first year versus those starting the second year. Results are considered in terms of the importance of learning experiences for stimulating development of perceptual and other skills which may not be so directly related to maturation as is commonly suggested.

35.15 POLITICS OF EDUCATIONAL INNOVATION: TOWARDS A RESEARCH AGENDA (G, SYMPOSIUM)

HANS N. WEILER, Stanford University, Chairman

Of the many interrelationships between politics and education, the political processes involved in the initiation, implementation or failure of educational innovations have so far received less than their due share of explanatory attention. This symposium will attempt a critical review of theoretical propositions about the nature of the political factors affecting the direction and success of innovative efforts in education; this attempt will be based on the panelists' studies of innovation processes in a wide range of political settings in the United States and abroad. It is hoped that the symposium will lead to a greater awareness of the need for developing and structuring this field of inquiry, and of its conceptual and theoretical parameters.

Participants are Michael W. Kirst, Stanford University; David W. Minar, Northwestern University; Ingo Richter, Max Planck Institute for Educational Research, Berlin, and Hans N. Weiler, Stanford University.

35.16 EMPLOYER-BASED CAREER EDUCATION (C, SYMPOSIUM)

YIN C. CHUANG, Center for Urban Education, Organizer

The goals of the Employer-Based Career Education (EBCE) program are: (1) to provide an alternative education program for all youths, aged 13-18, currently enrolled in public schools; (2) to unify the positive elements of academic general and vocational curricula into a comprehensive career education program; (3) to increase the relevance of the world of education to the world of work; (4) to broaden the base of community participation, particularly by involving public and private employers more directly and significantly in education.

The Career Education Development Task Force has a contractual arrangement with the regional educational laboratory to aid the Office of Education in developing an alternative for Career Education in different settings. This symposium is intended to present to the educational community a view of what has been done by regional laboratories in developing an Employer-Based Career Education model.

"The Academy for Career Education" will be discussed by Bruce G. Baron, Research for Better Schools, Inc. The Academy for Career Education (a private, nonprofit corporation) is currently operating in Philadelphia with 100 11th-grade students. The Academy is a model for an employer-based career education system being developed by the Career Education Program at Research for Better Schools (RBS). Several elements of the Career Education Program's work in the development and implementation of The Academy, as well as some current plans for the refinement, expansion, and dissemination of the model are described. The topics include: (1) the Model II concept; (2) some perceptions of the project's mandate from the U.S. Office of Education; (3) a general discussion of the project's goals and strategies; (4) the recruitment of employer participants; (5) the administrative structure of The Academy and its relationship with the Career Education Program; (6) the recruitment of students; (7) an overview of the instructional program, especially with respect to its employer-based aspects; and (8) a perspective on some basic developmental issues.

"Suburban-Rural Pilot Program" will be discussed by Rex Hagans, Northwest Regional Educational Laboratory. A pilot program in Employer-Based Career Education (EBCE) is being conducted, with the technical assistance of the Northwest Regional Educational Laboratory (NWREL), in the suburban-rural setting of Tigard, Oregon. This program is designed to demonstrate that students' total educational needs can be met in adult community settings while concrete occupational exploration and experience is provided, and at a cost comparable to that of traditional secondary education.

Student participants represent a cross-section of backgrounds and ages (16-20). Enrollment increases as the program evolves, from 25 by September 1972 to 50 by July 1973. Supplementing their activities in career settings are individualized programs, special instructional materials, and a learning center.

A consortium of students, employers, educators, and various public and private agency representatives is developing the program. NWREL provided technical assistance by forming the consortium and will continue to advise in areas of administration, management, curriculum development, program design, and evaluation and documentation.

Robert M. Peterson, Far West Regional Educational Laboratory, will present a paper entitled "Employer-Based Career Education Conducted by the Far West Laboratory." Career education is directed toward students, 13 to 18 years old, who are representative of others attending the Oakland, California, Public Schools in terms of socioeconomic status, racial composition, and plans for higher education. Cognitive and social development occurs through learning experiences established in the business community. Success of these experiences lies in the relationship developed between the student and an employee who volunteers his services. A Resource Center functions as a centralizing force to promote growth of this relationship. It provides also for the diagnosis of student aptitudes and skills, counseling and occupational information, and highly individualized programs of instruction in support of learning experiences gained in business or for preparing students to enter higher education. The basic intent may be summarized as providing the student with employability, and with the capacity to make rational career choices consistent with an awareness of his own goals, interests and abilities.

"Employer-Based Career Education Conducted by the Center for Urban Education" will be presented by Ying C. Chuang, Center for Urban Education. The Center for Urban Education and the New York City Board of Education are entering into a contractual arrangement with the U.S. Office of Education to study the feasibility of transferring "Satellite Academies" to "Employer-Based Career Education" (EBCE) and engaging in planning, pilot design and field testing. The initial analysis indicates a five-phase requirement: (1) exploratory analysis of the notion of EBCE, (2) in-depth analysis of the Satellite Academies Program, (3) plan of SAP/EBCE program, (4) pilot design and field testing of SAP/EBCE program, and (5) design EBCE program for New York City. This presentation will describe the process for developing Employer-Based Career Education in an urban setting.

35.17 THE SOCIAL CONTEXT IN TEACHER EDUCATION AND ATTITUDES

Public School Teachers' Work Motivation, Organizational Incentives, Job Satisfaction, and Primary Life Interests

DOUGLAS R. GLASNAPP, CECIL G. MISKEL, and RICHARD V. HATLEY, The University of Kansas

The present study was initiated to develop basic research conclusions regarding the interrelationships among aspects of work motivation, organizational incentives, job satisfaction, and primary life interest for a public school teacher population. Responses from 2,039 teachers on 14 variables were obtained and partitioned into sex by teaching level groups for analysis purposes. Interrelationships were investigated using multiple regression and discriminant analysis techniques. Conclusions based upon the results were drawn. The applicability to educational organization of some existing theories of motivation and incentives to work, related to industrial organization, were examined and evaluated in light of the obtained results.

The Stanford Group Process Training Curriculum: Research, Development and Evaluation

ROBERT H. KOFF and GEORGE N. SOUSA, Stanford University

Most teacher education programs lack evaluated curricula for training teachers to solve problems in group situations. This paper describes research and evaluation activities particular to the development of the Stanford Group Process Training Curriculum. Utilizing a pre- and posttest design, field tests were conducted with an experimental school staff (N = 18) and teachers in training (N = 17). Results showed that training significantly improved participant group problem-solving performance. Reliability and validity coefficients for two observation instruments, which assessed group process and product dependent variables, are presented. The results are discussed in terms of a model for describing cognitive aspects of group problem solving.

Personality Correlates of the Research-Service Dimension

K. R. RICHARDS, CANDACE BORLAND, and PAUL G. LIBERTY, JR., The University of Texas at Austin

In an effort to explore the personality orientations of educational professionals, the dimension of Research versus Service was chosen as a relevant base. A group of educational psychology graduate students was divided on the basis of their responses to a research versus service scale. A seven-point bipolar, semantic differential type questionnaire was

used, with the students responding according to their "I favor. . ." direction and degree. Analyses of variance were performed and a P value of .10 or less was set as the standard to judge significance of differences between group means. The results of the analyses are reported and their implications for educational personnel are discussed.

Comparison of Educators' and Industrial Managers' Work Motivation Using Parallel Forms of the Work Components Study Questionnaire

BILLY W. THORNTON, CECIL G. MISKEL and
MARCUS S. PATTON, The University of Kansas

The idea that educators would differ from business managers on Herzberg's motivation factors and Blum's security orientations was posited. Parallel questionnaires were used to measure the motivational variables. The sample was composed of 432 teachers, 118 administrators, and 192 industrial managers. Data were analyzed using multivariate and single classification analysis of variance and covariance techniques. Educators placed more emphasis on environmental and security factors. Business managers were generally higher on competitiveness desirability.

35.18 MICROTEACHING II (C)

The Relation of Teacher Performance in Microteaching to Subsequent Student Achievement and Rating of the Teacher under Classroom Conditions

FREDERICK J. McDONALD, PAUL NALIN, and
SUSAN WEINBERG, Educational Testing Service

This study analyzed the relationship between the kinds of questions asked during a microteaching session and the achievement of students subsequently taught under classroom-type conditions. Teachers taught the same topics in microteaching; each taught a two week course six weeks later. Each question asked was classified in one of eight categories. The categories identified the question by its cognitive complexity, immediacy to the student, and source of verifiability. No single type of question was associated systematically with achievement; different question-types predicted achievement in a topic by subject by question interaction.

Classroom Interaction Patterns during Microteaching: Wait-time as an Instructional Variable

MARJORIE A. BOECK, and GALE P. HILLENMEYER,
Duke University Medical Center

The study was designed to investigate the relationship between wait-time and two classroom interaction variables: cognitive level of teacher questions and length of student response. The interval of time between a teacher question and the next verbal response by teacher or student (wait-time) was measured using an electrocardiograph with calibrated paper connected to an audiotape recorder. Students taught to categorize and graph their own questioning behavior increased the rate at which they asked high-level questions. The wait-time for experimental subjects increased and was directly related to the length of student response. Control subjects did not show these changes.

Microteaching: An Examination of the Model and its Variations

ADRIAN P. VAN MONDFRANS and SUZANNE B.
HISCOX, Brigham Young University,
JIM C. FORTUNE, University of Massachusetts,
WILLIAM JOHNSON, University of Illinois,
Champaign

Microteaching as developed at Stanford University has received much attention from educators, but the model has been adapted in many institutions due to the cost and time involved. In order to help professionals evaluate microteaching at their institutions, this paper looks at the rationale and effectiveness of the full model as developed at Stanford and at its adaptions. An attempt is made to determine optimal models for specific instructional needs.

35.20 RACE AND LANGUAGE I (C)

Study of the Language Competency of Black, Inner-City High, Average and Low Readers in the Elementary Grades

SUE A. DEFFENBAUGH, Cornell University

The objective of this study was to compare the production ability of the black, inner-city child who reads well to his counterpart who reads poorly on a test requiring the formulation of standard English grammatical features of past tense *-ed,* noun plural, possessive noun, and third person singular. Seventy-six subjects from an inner-city, elementary school in a large New York city were given a modified version of Berko's (1958) nonsense word test. Significant differences at the .01 level were found on all four grammatical features for the high and low reading groups. No significant interactions were found between reading achievement and age, or reading achievement and sex and test performance.

The Effects of Dual Information Processing of Standard and Nonstandard English in Nonstandard Speakers

RICHARD M. MIZELLE, University of Wisconsin, Madison

The effect of processing information in standard and nonstandard English was investigated using an equivalent standard and nonstandard English passage as the stimulus. Eight literal and eight inferential questions derived from the passage were used as the index of comprehension. Two hundred Black students were randomly assigned to one of eight treatment conditions. The experimenter was Black. The results revealed four out of ten planned comparisons to be significant. The NN printed condition facilitated learning more than any other condition. The NN condition, collapsed across sensory modes (printed and auditory), was found to be more significant than any other collapsed combination.

Children's Responses to Reading Standard English and Nonstandard Dialect Stories: A Study of Evaluation and Comprehension

GROVER C. MATHEWSON, University of California, Berkeley

Attitudes toward reading stories in Black English and standard English were explored in third-graders. Twenty-four black children and twenty-four white children participated. The children used a semantic differential type scale to rate stories in the two language forms. It was found that because both groups of children had great difficulty decoding the dialect forms from print, their ratings of Black English stories were significantly lower than their ratings of standard English stories. The findings indicate that reading may be a poor way to present dialectally diverse English to elementary school children who have learned to read with standard English.

Teaching English by Contrastive Analysis of Two Dialects

MARILYN D. HARTMAN, U.C.L.A.

This study investigates whether a regular English-class format for teaching reading students whose natural language is black English (BE) is adequate in presenting standard English (SE) at secondary level.

Foreign-language contrastive analysis, pattern practice and oral drilling as an experimental treatment is evaluated with usual language skills strategies using objects for communication as a control. Objectives were to know conjugated words from *be*, patterns in which conjugated *be* forms are omitted in BE, patterns in which invariate *be* in BE is *always ≠ conjugated* form in SE. Consistent evidence indicates better experimental results at the .05 level.

35.21 THEORETICAL ISSUES (C)

A Discussion of the Theoretical Contradictions Found in Modeling Research and Social Learning Theory When Interpreted within Phenomenological and Social Comparison Contexts

JOHN P. DOLLY and CHAD D. ELLETT,
University of Georgia

The authors attempt to show how modeling research derived from social learning theory has neglected subjects' self-evaluation in relationship to task requirements. The paper points out the limited range of subjects which has been used and how the results obtained are not easily generalized. Formulations within phenomenological and social comparison theories are cited as offering alternative and more comprehensive explanations of the data obtained in modeling research. Recommendations for future research in modeling are given in order to clarify the theoretical differences found.

The End of the Drunkard's Search? A Report on a Radical Solution of the Problem of Evaluation of Instruction

HENRY C. JOHNSON, JR., The Pennsylvania State University,
DENT M. RHODES and ROBERT E. RUMERY, Illinois State University

This paper critically appraises the theory and methodology for evaluating instruction and summarizes the rationale, design, and field-testing of one component of a comprehensive teacher assessment program in radical departure from current practices. A student-response and instructor-response form were constructed which provided information about the proximity of instruction in a course to a five-component model. Field-testing showed ability to distinguish among courses, among instructors, and among instructional options. Furthermore, instructional outcomes could be distinguished from favorable or unfavorable impressions of a course, thus providing the possibility of a plausible diagnostic assessment of instruction.

Notes on the Distinction between Excitement and Education

LILIAN G. KATZ, University of Illinois

It is asserted that under the influence of curriculum developers, R & D disseminators, and general cultural influences, teachers of young children perceive that part of their role is to keep their children excited (high level of responsiveness) or "turned on." This perception leads to (1) child dependence on and expectation of adult-induced excitement; (2) absence of opportunity for children to learn/ to engage in sustained work; and (3) teacher reliance on superficial tricks and gimmicks. Similarly, teachers are victims of disseminator–induced excitement. It is asserted that excitement cannot last and is followed by disconsolation and mistrust of educational R & D disseminators.

A Clue to the Relationship between "Learning" and "Liking"

MARGARET M. CLIFFORD, University of Iowa

This paper identifies conditions under which liking and learning are positively correlated in education. It suggests that such a correlation is a multiplicative function of task-commitment on the part of the S, and the extent to which he feels personally accountable for performance outcomes. Empirical evidence and intuitive support are presented in defense of this proposed model.

35.22 TEACHING MENTALLY RETARDED CHILDREN (C)

Teaching Mentally Retarded Children Word Recognition Skills through Use of Hypothesis/Test Procedures

TEARA ARCHWAMETY, University of Minnesota,
S. JAY SAMUELS, University of Minnesota

The purpose of the study was to take the hypothesis-test model of word recognition and to derive an instructional strategy for reading from the model. Seventy retarded children (mean age nine) were randomly assigned to an experimental and control group. Experimental children were trained on components of the model while controls were given reading tasks unrelated to the model. Results indicated that experimental subjects were significantly superior in word recognition. Instructional strategies derived from the model are not deliberately given in school. The authors have specified what these strategies are and how they can be taught.

Measured Perceptual Modality Strengths as Descriptors for Establishing Instructional Objectives with Educable Mentally Retarded Children

DAVID A. SABATINO, The Pennsylvania State University

The major hypothesis addresses the issue of teaching to measured visual or auditory perceptual modality strengths utilizing a matched perceptual curriculum. The design specified dividing the 90 EMR Ss into three groups: a visual perceptual, auditory perceptual, and nonmodality preference group. The visual and auditory perceptual curriculum were whole-word discrimination training interventions utilizing 360 words from Thorndike's 1-1000 list. A significant aptitude x treatment interaction was not obtained. The subject groups with measured visual and auditory perceptual strengths made significant gains on the visual discrimination intervention and not the auditory task. The explanations and implications are discussed.

A Comparison of Conceptual Strategies for Grouping and Remembering Employed by EMR and Non-retarded Children

R. HUNT RIEGEL and ARTHUR M. TAYLOR,
University of Minnesota, RD & D Center

This study compared the kinds of groupings generated in a sorting task between samples of young EMR children and non-retarded children of equal C.A. Further comparisons were made on the total recall and organization of recall of each sample. It was found that there are reasonably specifiable differences between the samples on indices of grouping strategies generated in the test situation. These differences were related to highly significant differences in recall scores. The significance of clustering during recall was discussed, as well as educational implications of the findings.

A Comparison of Three Strategy Approaches for Teaching Vocabulary Concepts to Retarded Children

ARTHUR M. TAYLOR, MARTHA L. THURLOW and
JAMES E. TURNURE, University of Minnesota

Three versions of vocabulary programs were developed. Each version was based on a different set of strategies. Two of these sets of strategies relied on an integration approach which stressed the relationships

between vocabulary words. The control version utilized strategies which emphasized elaboration and only intra-item associations. The performance of 103 educable mentally retarded children was compared on a set of orthogonal planned comparisons. These analyses revealed that the integration approach resulted in significantly higher vocabulary achievement. This difference was also found to transfer to a posttest measure of general vocabulary ability. The results demonstrated that strategies can be defined and controlled well enough in the classroom to permit comparison of strategy approaches.

Strategies for the Sequential and Consequential Arrangement of School-Appropriate Behaviors

H. DIETER BLINDERT, The Children's Psychiatric Research Institute

School-appropriate behaviors were established in 20 young retarded and handicapped children through the application of strategies for the sequential and consequential arrangement of teaching-objectives, and teaching procedures. The positive findings indicate strongly that the diagnosis of mental retardation does not signify an innate disability to achieve standard performances but must rather be regarded as being a function of little or no previous teaching. Teaching has to be defined as that activity which brings about learning. There was no preselection of children for the study. All children for whom admission into the program was requested were accepted. All children's achievement levels were raised.

36.01 THEORIES OF HIGHER EDUCATION (B, SYMPOSIUM)

TED L. COOPER, Central Washington State College and
DONALD T. WILLIAMS, University of Washington,
Chairmen

This symposium, by presenting varying views on the development of theories of higher education, may suggest along what dimensions and by what means theories of higher education, now largely implicit, might be developed explicitly. Ever willing to study other institutions and other people, academics have turned only in recent years to the systematic study of higher education and themselves. The body of data on higher education grows daily, but theories by means of which these data might be interpreted have yet to emerge. AERA has shown growing interest in reporting and analysis of data in the context of higher education; AERA might also engage in activities aimed at tying together the data systematically.

Theories of higher education may gain two directions: (1) Some theorists will undertake microtheory, dealing with parts of the whole, e.g., theories of instruction and curriculum, of administration, of organization and planning. (2) Others will attempt to construct macrotheories, e.g., what combination of circumstances might account for change in higher education or project its future, what combination of goals, environments, people, and activities account for certain outcomes (including change) in higher education.

Karl H. Pribram, in his book, *On the Biology of Learning,* expressed a need he foresaw in his field: "Much has been learned, but a gnawing dissatisfaction remains, stemming in part from the very condition that ensured growth: a wealth of data, often contradictory, that begs for meaning." Theories serve to give meaning to contradictory data. The very fact of contradiction requires that the theorist draw distinctions between one body of findings and that other body which conflicts with the first. From such distinctions theories begin to evolve.

Practitioners and those who study higher education today have a special need to understand the meaning of the data which surround them. Funding sources ask that monies given to support higher education achieve identifiable outcomes. The academic may prefer to answer such demands in terms of intangibles difficult to measure, but he has available to him a wealth of data which, if given meaning, could serve to assure the holders of the public purse that the money is well spent. Indicators of human growth and development, extensions of man's knowledge, and community benefits attributable to higher education, can strengthen the academic's hand, especially as the theorist can link these outcomes to certain activities within higher education. More importantly, from the academic's bias, this quest for theories of higher education can serve a more basic need, the need to know. The "gnawing dissatisfaction" of which Pribram writes derives at least in part from the academic's need to give meaning to the phenomena of his daily professional life. Theories of higher education can give meaning to these experiences.

36.02 MULTI-DISCIPLINARY SYMPOSIUM ON THE POSSIBLE EFFECTS OF YEAR-ROUND EDUCATION ON COMMUNITY, SCHOOL, FAMILY, AND CHILD (A, SYMPOSIUM)

DAVID J. PARKS, National Institute for the Study of Year-round Education, Organizer

Year-round education has become an increasingly prominent innovation in American education, public and private. This prominence is demonstrated by the rapid growth of interest in year-round education as a means of improving educational programs and of coping with overcrowded buildings resulting from decreasing financial support and bond issue defeats. The extent of this interest is illustrated by the number of published articles on the topic, the number of districts and states conducting feasibility studies, the number of implemented programs being reported, the number of states passing permissive legislation and providing financial support for pilot programs, the attractiveness of the new National Council on Year-round Education which serves approximately 1,000 educators and lay citizens, and the establishment of a National Institute for the Study of Year-round Education at Virginia Polytechnic Institute and State University.

One outgrowth of this interest in year-round education is the demand for information by educators, boards of education, medical, legal, social and governmental professionals, businesses, social and community organizations, parents, and taxpayers. Unfortunately, information based on hard data is limited. Few programs have been in operation long enough to evaluate effects upon community, school, family, and child, and, very few of these have planned comprehensive evaluations. Consequently, there is an urgent need for indepth studies of all facets of year-round education.

There is little data based knowledge available on the effects of year-round education on community, school, family and child. There are, however, many unsupported hypotheses in the literature. The symposium will highlight these hypotheses, generate additional hypotheses, bring to bear the expertise and insight of a businessman, a practitioner, and researchers in various disciplines on the problems in year-round education; and explore alternative methods of testing the hypotheses and solving the problems.

"Research Needs: Year-round Education" is the subject of a presentation by David J. Parks, Institute for the Study of Year-round Education, Virginia Polytechnic Institute and State University. The current literature on year-round education is replete with feasibility studies, reports on operational programs, and thoughtful consideration of the potential effects of year-round education on the community, school, family, and child. Lay boards of education are frequently asked to make decisions on whether to implement year-round programs on these rather superficial data. More hard data of the type being gathered in Prince William County, Virginia, are needed if boards, school divisions, and communities are to make intelligent choices. An effort is being made to stimulate the development of a body of knowledge on year-round education to meet the information needs of the public, school boards, businesses, public agencies, and school personnel.

In his "The Effects of Year-round Education on Development of Children," Donald Biskin, Virginia Polytechnic Institute and State

University, will emphasize that one of the main concerns in year-round education is the effect upon the social, emotional, physical, and psychological development of children. Alteration of the school calendar and the curricular innovations which tend to piggy-back year-round programs may well provide the impetus for individualizing and humanizing instructional methods and enhancing cognitive, affective, and psychomotor development of children.

"The Effects of Year-round Education on Teacher and Administrator Attitude and Performance" will be discussed by John Colson, Research and Development Department, Prince William County, Virginia. Moving into year-round programs requires considerable change in family and work routines of teachers and administrators. This disruption may create adjustment problems reflected in lower morale, job satisfaction, and restricted performance. Through staff development programs, participative decision-making, and variable contracts, these adjustment and performance problems may be diminished.

Charles A. Ibsen, Virginia Polytechnic Institute and State University, will present a paper entitled "The Effects of Year-round Education on Family and Community." A number of school divisions have entered year-round education without fully realizing the effects of such a program on the family and community. Family vacations, child care, and routine living are disrupted by year-round educational programs. Community recreational facilities, church activities, public service programs, police work, and private foundations are required to alter their traditional patterns of operation.

George Jensen, President Elect of the National Council on Year-round Education, will discuss "The Effects of Year-round Education on Business, Industry, and the Professions." Current business, industrial, and professional practices will need considerable altering as year-round education spreads throughout the country. Camping facilities, moving firms, recreational resorts, realtors, doctors, and many others may find that their hours, practices, and modes of operation need revamping to meet the more consistent level of demand accompanying installation of year-round programs. Peaks and valleys in business demand are always costly. Year-round education should have a leveling effect upon hiring personnel, scheduling facilities and equipment, sales, and demands for professional assistance.

"The Effects of Year-round Education on Educational Costs and Public Support" is the subject of a paper to be presented by Robert Staaf, Virginia Polytechnic Institute and State University. The costs of education have continued to rise at a rapid rate. Population growth, mobility, and the demand for increased education have caused school districts to issue bonds in support of new facilities and to raise taxes to meet daily operating expenditures. Year-round educational programs require thorough analysis from capital, operational, and public support points of view. Losses and gains in each of these areas must be determined by comparison with the traditional nine month school.

36.05 A REPORT ON THE STUDY OF THE PROFESSORSHIP IN EDUCATIONAL ADMINISTRATION

A Report on the Study of the Professorship in Educational Administration

ROALD F. CAMPBELL, The Ohio State University
and L. JACKSON NEWELL, University Council for Educational Administration

This study addressed five questions about professors of educational administration: Who are they? Where are they? What do they do? What do they believe? Why do they believe as they do? Three role orientations were hypothesized: cosmopolitan, local, and practice. Data gathered with a ten page questionnaire from 1,333 professors were factor analyzed. The hypothesized orientations were substantiated. The data were also analyzed in terms of the progress of the academic field towards professionalism. The study has implications for research and development related to the professorship in educational administration and for professorships in other applied fields, particularly in education.

36.07 CURRICULUM DECISIONS: THE CONCEPTUAL AND THE PRACTICAL (B)

Curriculum Decisions: A Theoretical Framework

JOHN I. GOODLAD, University of California, Los Angeles
and Institute for Development of Educational Activities, Inc.

There are different kinds of curricula, depending on definition, involving differing decisions, data, and products. Goodlad (1966) has classified these into levels and separated the ideological from the practical. There is a growing number of inquiries conducted within this frame. Since Goodlad's initial work was published in a limited, experimental edition, and since most of the related studies are unpublished dissertations, there is a need to present this work to an appropriate audience. The purpose of this paper is to present a conceptualization of decision-making defined in terms of remoteness from learners, the data-sources, and the probable actors.

Curriculum Legislation and Decision-Making for the Instructional Level

HENRY W. HILL, Cobb County Public Schools,
Marietta, Georgia

The purpose of this paper is to present a study of curriculum decision-making on the societal level. More specifically, a questionnaire was developed and administered to curriculum decisionmakers to determine the extent of their knowledge of curriculum legislation which should affect the curriculum decisions teachers make. Analysis of the responses showed no decision-making group possessed sufficient knowledge of curriculum legislation to make effective curriculum decisions. Recommendations are made as to questions needing further research and as to how communication of curriculum legislation can be improved.

Instructional Planning for the Development of Cognitive Behaviors

M. FRANCES KLEIN, UCLA

This study explored the applicability of the behaviors defined in the *Taxonomy of Educational Objectives: Cognitive Domain* to young children in the age range of seven to nine. A paper and pencil instrument was developed to detect and elicit the behaviors in children of that age range. Content validity, reliability and discrimination indexes for the test instrument were established. The study also exemplified the general curriculum planning process of setting objectives, selecting and organizing learning opportunities, and evaluating student progress proposed by Tyler at the instructional level of decision-making as identified by Goodlad.

An Analysis of Mathematical Competencies Necessary for Certain Health Occupations

EMMA C. JOHNSON, Spokane Community College

This study presents the results of an investigation of mathematical competencies necessary to cardiopulmonary and inhalation therapy technicians that they may function effectively in a hospital situation. The amount of mathematical commonality existing between the two disciplines was also explored. Sixty-three medical personnel were surveyed by questionnaire and rated 263 mathematics items as either essential, desirable, nice to know, or not needed. Textbooks were rated

comparably. Correlation coefficients were computed for rankings and textbook ratings by medical doctors, cardiopulmonary technicians and inhalation therapy technicians; they indicated the feasibility of a core mathematics program for the technicians. Rankings of items established mathematical competencies needed by the technicians.

Developing a Modular Secondary Educational Psychology Program—Minimal Resources

PHILIP LANGER, University of Colorado

This paper describes specific procedures for using graduate students and commercially available materials to develop a modular educational psychology program. The specific module structures include: (a) learning sequence; (b) rationale and objectives; (c) probing questions; (d) learning checks; (e) activities; and (f) general evaluation procedures. The system consists of 27 modules, divided into required and optional. Included in the system are a Student Guide and an Instructor's Manual.

36.08 INTERACTIVE PSYCHOLOGICAL RESEARCH AND CURRICULUM DEVELOPMENT IN READING (C, SYMPOSIUM)

ALAN M. LESGOLD, University of Pittsburgh, Organizer

The purpose of this symposium is to demonstrate the mutual interdependence of research and development in the construction of an individualized reading curriculum. The participants hope to demonstrate that the R & D setting enhances both psychological research and instructional development and to suggest means of optimizing this partnership. Presentations include descriptions of (1) the actual reading program being developed, (2) research on reading comprehension that interfaces with the program's development, (3) development of computer-augmented reading-comprehension instruction, and (4) procedures for evaluation of individualized instruction and of particular design features hypothesized to be essential to the program.

"An Adaptive Primary-Grades Reading Program, presented by Isabel Beck, University of Pittsburgh, will discuss the reasons for developing a new reading program (Beck and Mitroff, 1972) rather than simply modifying existing commercial material to include new design principles. The *N*ew Primary Grades *R*eading *S*ystem (NRS) includes instructional materials, a teacher-training program, and classroom management procedures as important components. Instruction is individualized, not only with respect to rate of mastery, but also for route of mastery. NRS is oriented toward urban children and its terminal objectives encompass the domain traditionally covered by the first three years of reading instruction.

NRS uses a code-breaking approach to beginning reading. A mixture of synthetic and analytic phonics is employed along with text displays that illustrate linguistic principles. A blending algorithm that has been tested with existing materials is taught to overcome the problem of combining separately-analyzed grapheme-related sounds into a single word. The algorithm is mastered rapidly and enables children to attack, without teacher assistance, new words containing any combination of grapheme-phoneme correspondences they have learned.

Students have considerable freedom of choice in the particular activities in which they engage and in the topics about which they read. A classroom-management component includes training of the students to make rational use of that freedom. From the start, NRS' reading materials correspond closely in syntactic and semantic structure to actual text. Text sequencing is currently based on existing difficulty-scaling procedures, but research is under way that examines the feasibility of text segments which specifically teach grammar or meaning structures.

"Comprehension By Novice Readers of Inter-Clause Structure," the subject chosen by Alan Lesgold of the University of Pittsburgh, will present research on comprehension of inter-clause structures (anaphoral such as pronouns and clause demonstratives. This research derives from the above-mentioned goal of teaching language structure directly when that is effective. The initial data are a corpus of responses of 80 third and fourth-grade children to questions about 42 passages, testing knowledge of 14 anaphoric structures. Analyses of accuracy of comprehension for these structures and of the specific responses children made have led to several preliminary conclusions. First, comprehension of these structures may involve surface-level processing when short-term memory constraints make joint functioning of decoding and deep-structure analysis impossible. This result is supported by protocols showing surface-level responses and by analyses showing that comprehension becomes less likely as word-for-word correspondence between question and text, and between anaphora and referent, is lost. A preliminary model of anaphora comprehension will be presented in which deep-structure processing is the skilled, automatic level of performance while surface processing represents an application of basic structural rules at the heuristic, problem solving level. Finally, there is some indication of differences in difficulty of structure even when these surface-processing variables are removed

"Computer-Assisted Comprehension Training" by Karen Block of the University of Pittsburgh will describe work on computer-augmentation of comprehension instruction. Texts and related questions appear on a CRT. Students either answer in a multiple-choice format or by constructing responses to open-ended questions. In the latter case, answers are followed by a display of material sufficient for the student to evaluate the acceptability of his answer. Branching is contingent on the student's self-evaluation, and protocols are produced in a format convenient for determining the adequacy of students' self-evaluation. Programs are based on passage difficulty measures and a preliminary model of question difficulty, enabling branching to a different level of question difficulty for the same passage or to a different level of passage difficulty. The system is also a convenient means of testing passage and question difficulty models.

In his paper, "Evaluation: An Essential Aspect of Research on Individualized Curricula," William W. Cooley, University of Pittsburgh, will consider the special problems of evaluative research in the context of developing an individualized instructional system such as NRS. Consideration will be given to: the problem of defining appropriate criteria for the new program; the design of studies that would yield unambiguous results regarding the program's effectiveness in a variety of contexts; measures of the variation in implementation of the program from classroom to classroom and the resulting impact on student achievement of that implementation variation; and differences between information useful to the developer in further refinement of the system and information useful to others in arriving at judgments about the system's worth.

The individual presentations are important statements on (1) a new reading system, (2) the nature of comprehension by novice readers, (3) an inexpensive but powerful computer augmentation of the reading system, and (4) determining the effectiveness of individualized instruction. Ordinarily, presentations of such diversity do not appear as a single symposium. However, a main purpose of this symposium is to exemplify a productive R & D ecology.

36.10 STUDENT/TEACHER INTERACTION IN THE CLASSROOM

The Influence of Interpersonal Skill Training on the Social Climate of Elementary School Classrooms

JEANNETTE A. BROWN and MARY ANN MacDOUGALL, University of Virginia

The objective of this investigation was to improve the quality of classroom interactions by providing opportunities for (1) teachers to gain insights into their own classroom behaviors and understand how these behaviors influence their classroom social climates; (2) children to explore the dynamics of classroom group life and learn the techniques of effective interaction with others. The impact of the two approaches was evaluated by observing changes in the affective perceptions of elementary school children through an analysis of variance design. Significant mean gains were observed for pupil self-perceptions and social acceptance among pupils.

Patterned Teaching Behavior: A Study of Dyadic Infracommunication

VIRGINIA C. DENNIS, University of Georgia

This is one of a series of proxemic studies made in laboratory, natural, or academic settings by the researcher with the Dennis Infracommunication Analysis Device (DIAD) (Dennis, 1971) to observe, classify, record and analyze dyadic infracommunication, including verbal and nonverbal modes. The focus is on communicative behavior of teacher and pupil, student teacher and pupil, and teacher and student teacher interaction. The researcher observed 2,633 dyads at an elementary school and recorded sex, race, status, position, locomotion, spatial distance, angle of orientation, gaze, smile, touch and audible transmissions. Resulting empirical data show communication patterns varied by sex, race and status, revealing patterns of teaching behavior.

Social Exchange in the Elementary School Classroom: The Problem of Teacher Legitimation of Social Power

RALPH W. LARKIN, Center for Urban Education

A study of teacher leadership styles and classroom climates in 75 elementary school classrooms showed that teacher task and expressive orientations powerfully influenced classroom morale. Teacher authoritarianism had no effect, calling into question interpretations of previous studies of teacher leadership. Teacher power orientation showed strong negative relationships to peer influences and peer group centrality. Typing classroom climates based on morale, peer influence, and peer group centrality, and combinations of teacher leadership modes based on task, expressive, and power orientations were strong influences on classroom climates. Teachers legitimated their power through satisfaction of task and socio-emotional needs of the students. Non-legitimation of power leads to alienated or rebellious classrooms.

Classroom Practices and the Development of Political Efficacy

CAROL A. MEIXEL and EMIL J. HALLER, Cornell University

This study tests the hypothesis that participation in classroom decisions, choosing class monitors, political discussions, and mock political elections operate indirectly on children's sense of political efficacy through the variables of school efficacy and political knowledge. The data is from questionnaire responses by 1341 Canadian elementary school students and their teachers in 1968. Automatic Interaction Detection Analysis and path analysis tend to confirm this hypothesis. It is concluded that it is not merely participation in these quasi-political experiences, but rather the results of these experiences on the individual's political knowledge and more general sense of efficacy, that affects political efficacy.

Facilitation of Cooperative Behavior in Elementary School Children

EMMY A. PEPITONE, Bryn Mawr College

Seventy-six groups of three fourth-or fifth- graders were asked to cooperate in making a block pattern on a round board. Five conditions were created, assumed to facilitate cooperation. In all conditions, cooperative goal structures existed. They differed systematically in the presence or absence of task-roles and group-roles. Behavior was pre-coded in various group oriented and individual oriented categories. A Productivity Index was constructed. As hypothesized, cooperative goal structures alone did not assure cooperative behavior. Task-role assignment alone tended to inhibit performance because of difficulty in role enactment. Pro-social behavior and performance was significantly greater where task-roles and group-roles were present.

36.13 ADJUNCT QUESTIONS AND LEARNING FROM TEXT (C)

Retention and Item Comprehension in Prose as a Function of Question Placement and Packing

INGRID SWENSON and RAYMOND W. KULHAVY, Arizona State University

Fifth- and sixth-grade children read 20, 66-word paragraphs describing a fictitious island and its people. A critical question on each paragraph was inserted before or after one, five, ten, or 20 paragraphs. The retention measure consisted of items testing both critical and incidental material, in both verbatim and lexical paraphrase form. Learners responded to both immediate and one week retention tests. Postpresentation of questions facilitated both acquisition and retention of medium length text segments. Critical items were better recalled, and there was no effect for the verbatim-lexical paraphrase variable.

Individual Differences in the Effects of Adjunct Questions on Learning from Prose Material

DAVID C. BERLINER, Far West Laboratory for Educational Research and Development, RICHARD SHAVELSON, Stanford University, MICHAEL M. RAVITCH, Stanford University, and DAVID LOEDING, Stanford University

Position (before or after) and Type (lower-order vs. higher-order) of question placed in prose material were varied. Main effects and aptitude treatment interactions were examined. When group means on immediate and delayed achievement tests were compared, the differences were usually statistically significant but small. Advanced Vocabulary—a test of verbal comprehension—interacted with treatments. Subjects with low scores on this measure should be assigned to text material with higher order questions inserted after a prose passage, while subjects with high scores should be assigned to text without inserted questions.

Effects of Meaningful Learning and Rote Learning Questions on Recall of Prose Material

JOHN RICKARDS, Purdue University

Eighty college sophomores answered questions either after every two or four paragraphs of text. Ss received either meaningful learning questions (ML) requiring subsumption of facts under given ideas, or questions involving either rote learning of facts (RLF) or of ideas (RLI). Additionally, some Ss received irrelevant questions (I). When relatively frequent, ML resulted in greater recall of relevant and incidental information than RLF, RLI or I, thereby supporting Ausubel's (1968) theory of subsumption. Also, only Ss given ML were adversely affected by less frequent pacing. It is argued that the more thorough processing associated with ML necessitates their relative closeness in text.

Recall Instructions and Learning from Text with Adjunct Questions

DONALD J. CUNNINGHAM and DON F. KELLER,
Indiana University

The effects of instructional set on the recall of text with questions interspersed before or after relevant text content was examined. Two instructional sets were used. Some Ss were told that the adjunct questions were only a part of the questions on the criterion test, while others were told that only the adjunct questions would appear on the criterion test. The results showed that instructions did not influence retention of content covered by adjunct questions on non practiced content. Question position did influence retention of non practiced material. Implications are discussed.

A Comparison of Prompting and Adjunct Questions in Learning from Text

DON F. KELLER and DONALD J. CUNNINGHAM,
Indiana University

The effects on immediate and five day retention of underlining critical portions of text was compared with inserting questions. Sixty Ss read text with questions before, after, or absent from text paragraphs and with answers to the questions either underlined or not underlined in the text. Results showed that both inserting questions and underlining increased retention of the material questioned and/or underlined (practiced items). Questions placed after paragraphs also facilitated the retention of non practiced information. An expected interaction between underlining and question position was not found and implications of this finding for the study of mathemagenic processes are discussed.

36.14 INSTRUCTIONAL MEDIA (C)

Improving Mental Skills through Filmic Modeling

GAVRIEL SALOMON, The Hebrew University of Jerusalem,
Israel

It was hypothesized that films can model specific figural operations, thus leading to their imitation, internalization and covert usage in new tasks. It was also hypothesized that low ability learners profit most from such modeling films. Two kinds of operations were either modeled, short-circuited or required in a series of three experiments: zooming-in on details and laying-out of solid objects. The results indicated that (1) filmic modeling of figural operations leads to their internalization as manifested by improved abilities in transfer tasks, and (2) aptitude-treatment interactions emerged; low ability Ss learn mainly from such modeling while high ability ones do not.

Film Vs. Lecture Methods of Instruction as Related to Imageability

STEVEN MARANTZ and FRED J. DOWALIBY,
University of Massachusetts

College students in five discussion sections of an educational psychology course were presented either a film or a videotaped lecture containing the same material as the film. Student's scores on the Hidden Figures section of the French Aptitude Test were used to investigate the possible interaction between mode of presentation and this individual difference. The criterion measure was a factual test containing both multiple choice and fill-in items. The results showed a significant interaction between scores on the Hidden Figures test and mode of presentation. Assuming the irrelevance of media attributes, such an interaction can be viewed from a perceptual-cognitive perspective.

Arousal and Memory in Multi-Media Presentation

ALFRED D. GRANT, University of Tennessee, Knoxville,
and FRANK H. FARLEY, University of Wisconsin, Madison

Reminiscence has been shown previously to be a significant function of arousal. Studies of chromatic versus achromatic presentation[1] have uncovered no facilitating effect of color on learning. Such studies have not undertaken specific reminiscence analyses, although there is reason to believe that chromatic is more arousing than achromatic presentations and thus should facilitate reminiscence. This hypothesis was tested with a 20 frame chromatic versus achromatic slide-tape presentation with immediate versus seven-day retention tests using 52 nursing students. The proportion of Ss reminiscing in the chromatic condition was significantly greater than in the achromatic condition. Theoretical and practical implications are considered.

Evaluation of the "Eager to Learn" Teacher Inservice Teleseries

THOMAS R. OWENS and PETER KNEEDLER,
Center for Planning and Evaluation

The "Eager to Learn" series consist of six half-hour TV programs and a semi-programmed viewer's guide designed to teach teachers, by modeling and explanation, to use seven teacher behaviors found common to four widely used teaching strategies. The evaluation focused upon the effectiveness of the series in enabling over 200 California teachers to understand the behaviors presented, improve their attitudes concerning the importance of the behaviors, and use the behaviors effectively in the classroom. Pre- and post-classroom observations revealed significantly greater increases over a control group in the frequency and quality of use of four of the five teacher behaviors observed. Greater gains were made by teachers who not only viewed the series, but also participated in weekly faculty follow-up discussions.

A Video Tape Technique for Assessing School Performance

MICHAEL J. ASH and HOWARD E. SATTLER,
Arizona State University

The relationship between video tape based observer judgments of attention to task and paper and pencil measures of academic performance was investigated. Forty-five fourth-grade pupils engaged in an arithmetic computation task were video taped for ten consecutive school days. Tapes were independently viewed by three observers and pupils were rated on attention to task. Significant correlations on the order of .50 ($p < .01$) were obtained between attention to task ratings and academic performance. An intraclass correlation of .93 was obtained as an estimate of inter-observer reliability. Data supports the use of indirect observational methods in assessing school performance.

36.16 ACHIEVEMENT AND THE DISADVANTAGED (C)

Relation of Level I–Level II Abilities to Socioeconomic Status

RANDOLPH MacDONALD, Brainard Hines,
CHARLES KENOYER, Appalachia Educational Laboratory,
Inc.

An empirical investigation of four of Jensen's hypotheses of Level I and Level II cognitive abilities and socioeconomic status was per-

formed. Results of five subtests of the Illinois Test of Psycholinguistic Ability administered to 225 preschool children supported three hypotheses, but failed to support the major hypothesis concerning the distribution of Level I and Level II abilities across socioeconomic status. Tasks reflecting Level I and Level II abilities were performed more accurately by upper SES children even after IQ was controlled for by covariance. The results may reflect a general state of deprivation for children in the lower SES level as opposed to a specific Level II deficit.

Children's Memory: SES Differences in the Development of Serial Processing Ability

ANNE KEETON, Queen's University, and LESLIE D. McLEAN, Ontario Institute for Studies in Education

Two studies examined serial recall processes of first-grade Canadian children from inner-city and suburban backgrounds. In the first study significant differences were found in the serial position curve of recall. Suburban children recalled a greater number of early-presented, primacy items ($p < .001$), while inner-city children who had equivalent span capacity, recalled more later-presented, recency items ($p < .05$). In the second study, four subgroups of children were assigned to high and low SES, primacy or recency response groups. All groups showed significant shifts toward the alternative recency or primacy recall pattern ($p < .05$) following a training period. Recall is attributed to learned serial processing strategies rather than to differences in intellectual capability (Jensen, 1968).

The Effects of Three Spelling Programs on the Spelling Achievement of Sixth Graders from Two Culturally Different Areas

DOUGLAS J. ROBERTSON, California State University, Northridge

This study sought to determine the most effective spelling program for 216 sixth-graders coming in equal numbers from an inner-city school and a suburban school. A secondary purpose was to examine differences which might exist between inner-city children and suburban children in spelling achievement. Analysis of Variance and correlated *t* tests revealed that the Hanna Linguistic Spelling Program was more effective than the Kottmeyer and teacher-constructed programs. A systematic spelling approach based on linguistic principles rather than on word lists to be memorized may be a superior approach. Suburban children did not outperform inner-city children.

Differences in Perceived Sources of Academic Difficulties: Black Students in Predominantly Black and Predominantly White Colleges

J. CHARLES JONES, Bucknell University, LYNN HARRIS, Morgan State College, WILLIAM F. HAUCK, Bucknell University

One hundred and ninety-five black students in predominantly black colleges were asked to rate 12 sources of academic difficulties and to rank the three most important sources. Significant differences were found between students attending the two types of schools on competition, high school preparation, communications with instructors, campus social and intellectual atmosphere, and advisement. Blacks attending black colleges ranked poor study habits, finances, and communications problems with instructors as most serious problems; those in white colleges ranked social life and high school preparation as most serious.

36.17 RACE AND LANGUAGE II (C)

Syntactic Elaboration in the Speech of Lower-Class Black and Middle-Class White Preschool Children

PAUL R. AMMON, University of California, Berkeley

Two samples of four-year-old children were compared in a test of the hypothesis that lower class black children produce less elaborated speech than their middle class white peers. A speech sample was collected from each child in an interview and was analyzed with respect to the complexity of noun phrases and verb-complement units produced. Measures of syntactic elaboration were constructed in such a way as to remedy the problems of previous studies. Multivariate analyses of variance gave little support to the elaboration deficit hypothesis. The results suggest a misplaced emphasis on elaboration in many compensatory programs for young children.

The Comprehension and Communication of Relational Concepts by Inner-City Children

JUDITH A. MEISSNER, Teachers College, Columbia University

Fifty-four second-grade and 38 fourth-grade black children were administered a formal comprehension test and an informal communication task, using a set of relational concepts. Concept comprehension was significantly easier than communication. The fourth-grade speakers receiving the comprehension task first gave significantly more correct concept instructions than the fourth-grade speakers receiving the communication task first, but the second-grade groups did not differ significantly. There were few novel expressions of concepts by speakers and communication was relatively inefficient w h many ambiguous concept descriptions by speakers and poor questioning by listeners.

Language and Aggression: An Exploratory Study amongst Black and Puerto Rican Disadvantaged Youth

ALBERT MONTARE and SHERLE BOONE, Rutgers University

An exploratory study was performed to investigate the relationship between language proficiency and aggression within Black and Puerto Rican disadvantaged youth. The experimental question put to test was whether an inverse relationship exists between level of language proficiency as measured by Standard English and amount of physical and verbal aggression as observed during sessions of intra-peer-group interaction. The chief tentative result of the present study was that the Puerto Rican group proved to be significantly lower than Blacks in level of language proficiency and significantly higher than Blacks in amount of observed verbal and total aggression.

Usage of Selected Language Structures by Different Ethnic and Social Class Groups

DAVID L. RATUSNIK, PHILIP FRIEDMAN and ROY A. KOENIGSKNECHT, Northwestern University

The use of selected phonological and grammatical structures was investigated among low and middle socioeconomic preschoolers. The lower class group was equally divided by race (black and white), while the middle class group was composed of all white subjects. Four speech elicitation tasks emphasizing different modes of speech stimulus presentation were employed. For lower class subjects, the generative nature of grammar was observed to be consistent across different stimulus presentation modes on the phonological, but not the grammatical, level of language. Phonological and grammatical structures which were characteristic of the low socioeconomic black group were observed. Some of the results supported previous empirical observations

of significant overlapping among lower class children in English language behavior, regardless of race.

36.18 THE FAMILY AS A SOCIAL CONTEXT FOR EDUCATION

Parental Evaluations and Reported Behavioral Sanctions as Predictors of Student Self-Conceptions of Ability

ROBERT W. BILBY, Western Michigan University,
JOHN A. VONK, University of Northern Colorado, and
EDSEL L. ERICKSON, Western Michigan University

This paper focuses upon parental evaluations and reported behavioral sanctions as predictors of student self-conceptions of ability (SCA). The data for this study were collected from 120 fifth- and sixth-grade students and their parents in four communities in southwestern Michigan. The results indicate that parental evaluations are a better predictor of self-concept of ability than are the behavioral sanctions of parents. Further, behavioral sanctions do not contribute significantly to the prediction of SCA when combined with parental evaluations. This suggests that the two independent variables are not empirically redundant and that their unique contributions should be analyzed in future research.

Adolescent Competence and Educational Ambition

D. E. EDGAR

This research tests a new path model of educational aspirations/expectations by linking social background resources, home-school-child interaction processes, various forms of competence, and adolescent value-orientations. Using a large random sample of Australian 14-15 year-olds, the study indicates the need for careful delineation of class-related background variables and situational constraints in explaining adolescent ambitions. The "ambitious" child is found, despite his social advantages, to be more conforming, self-deprecating, less self-confident and powerful than the child not pressed to achieve. Social versus self-defined forms of competence are seen as major explanatory factors.

Parents' Ability to Attend to Children: Predictors of Intelligence

M. STEPHEN SHELDON, California State University Los Angeles
GLENDON NIMNICHT, Far West Laboratory for Educational Research & Development
NICHOLAS F. RAYDER, Far West Laboratory for Educational Research & Development

The amount of common variance between intelligence test scores of Follow-Through children and variables describing their parents' ability to attend (ATA) to their needs were investigated. The data from 684 Follow-Through children were randomly divided into three groups. A regression equation using the ATA variables was developed on one sample and cross-validated with a second. This resulted in considerable shrinkage. Two moderator variables were added. The resulting equation yielded an R of approximately .50 with little shrinkage when cross-validated on the remaining two samples. The addition of race variables to the equation did not improve the R. Implications for nature-nurture question are discussed.

Cultural Deprivation and Intelligence: Extensions of the Basic Model.

TREVOR WILLIAMS, Memorial University of Newfoundland

Cultural deprivation research which focuses on children's intellectual variability relies heavily on a model linking family SES, family environments, and children's IQ's in obvious ways. Evidence from behavioral genetics and status attainment research suggests a critical antecedent variable, parental intelligence, has been omitted. The consequences are two-fold: (1) there is the possibility that many reported effects are partly spurious, and (2) there is scant knowledge of the way in which social-structural mechanisms translate parental intelligence into educational, prestige, and economic inputs into family environments, and thereby affect children's abilities indirectly. Causal models developed from this argument are quantified with data on 100 families.

36.19 CONTRASTS OF THE TRADITIONAL AND THE EXPERIMENTAL IN CURRENT SCHOOL PROGRAMS

Status Variables Related to Team Teacher Satisfaction in the Open Area School

MARJORIE S. ARIKADO GOLDTHORPE and DONALD F. MUSELLA, Ontario Institute for Studies in Education

The major purpose of this study was to determine relationships between status congruence and status consensus and team teacher satisfaction with the team situation. The sample consisted of 148 teacher teams (627 teachers) selected from 74 open area schools. The results indicated that teachers on balanced teams and/or leaderless teams tended to be more satisfied than teachers on unbalanced teams and/or teams with formal leadership. In teams with formal leadership, teacher satisfaction was found to be positively related to status congruence, while in all teams status consensus was found to be positively related to team satisfaction with the team situation.

Sociology and Open Education: An Experiential Project

STEPHEN D. LONDON, Wellesley College

The author describes an open classroom that he structured for inner city children nine to 13 years of age. The classroom utilized sociological principles as the major foundations for the pupils' learning experiences. The project demonstrated how the growing bodies of sociological thought and research which are related to education can be applied directly to the teaching and learning processes in open education. The paper focuses upon the development of the pupils' concerns with social stratification, its relationships to educational aspirations and achievement, and the manner in which the pupils' understanding of these phenomena influenced their own aspirations and performances within the classroom.

The Relationship of Evaluations of Students' Cognitive Performance to Their Self-Concept Assessments and Mental Health Status

KAY POMERANCE TORSHEN, University of Illinois at Chicago Circle

This study investigated differences between effects of students' grades and achievement test scores on their self-concepts and mental health. It proposed that grades have stronger effects because they have greater impact in the classroom. Sears' Self-Concept Inventory and Glidewell's Mental Health Assessment were administered to 402 fifth-grade students. Results showed that: (1) grades, independent of achievement test performance, were related to students' self-concepts and mental health; and (2) achievement test performance, independent of grades, was *not* related to students' self-concepts and mental health. Results support use of criterion referencing, formative evaluation and mastery learning.

36.20 TEST PERFORMANCE (C)

Test-Wiseness Program Development and Evaluation

KATHERYN K. WOODLEY, The American College of Life Underwriters

The Test-Wiseness (TW) Program was designed to provide training in responding to multiple choice and essay type test items. The program combines instruction and measurement in a workbook format with diagnostic testing and prescribed branching. It was designed for use by adults and focuses on test taking strategies applicable to a wide variety of occupational or licensing examinations. The TW program was first test tested on a sample of 259 C.L.U. candidates. A revised program was tested on another sample of C.L.U. candidates, plus two samples of college students. The general findings were that TW increased and test anxiety decreased as a result of using the program.

Repeated Testing during Acquisition of College Course Material

JAMES H. CROUSE, University of Delaware
PETER IDSTEIN, Washington College

Two experiments investigated the acquisition of course material under conditions of repeated testing. In Experiment I, with limited study intervals, acquisition increased over trials of study followed by testing. In addition, adjunct information about the content of the test item pool also increased performance. In Experiment II, with student determined study intervals, there was little or no change in performance associated with repeated testing.

The Effect on One's Own Performance of Evaluating Peers

STUART J. COHEN, University of Toledo

Fifty-three high school males took a minicourse on library usage. All were randomly assigned a topic and given response sheets requiring the use of dictionaries, encyclopedias, periodicals, and books. In a discussion session, all received instructional handouts. Students were assigned either to evaluating two peers' pretests (experimental) or researching two new topics (control). New topics were randomly assigned for the posttest. Both groups mastered 50 percent more objectives on the posttest than on the pretest. No significant differences between the gains for the two groups were found. Evaluating a peer's work was as effective as performing additional tasks.

Specificity of Instruction, Locus of Control and Test Uncertainty in Achievement

KENNETH GREENBERG, DWIGHT DAVIS, LENORA DILL, JANET SCHUMACHER, and HAROLD COOK, Teachers College, Columbia University

One hundred forty-four fifth- and sixth-graders were assigned to one of four treatments: (1) words and their meanings, (2) words in sentences, (3) words, their meanings and a sentence, and (4) words alone. Half of the Ss were told they would be tested on these words, and half were not. Pre-measures were obtained for reading ability and locus of control. All Ss were tested on definitions, usage, and analogies. Results indicated that (1) internals performed better than externals on definitions and usage tests; (2) the definition, and definition plus usage groups performed better on the definition test than other groups; and (3) an interaction existed between locus of control and the test/no-test treatment.

The Effectiveness of Six Personality Variables in Predicting Success on the Nursing State Board Examination

PATRICIA CUSICK, St. John's Hospital, and LAURA D. HARCKHAM, Manhattan College

Six personality measures on the Psychological Corporation Personal Preference Schedule, Achievement (ACH), Orderliness (ORD), Persistence (PERS), Congeniality (CONG), Altruism (ALTR), and Respectfulness (RESP), were used to predict success on the State Board Examination (SBE) for 47 nursing school students. The best single predictor was ORD (r = .80), and moderate correlations were found for RESP (r = .53) and ALTR (r = .42). The other variables were poor predictors. Addition of RESP, ALTR, and CONG produced strong multiple correlations (R = .921, .903, and .823, respectively), indicating that personality variables are indeed useful predictors of achievement on a licensing examination.

37.04 THE HIGH SCHOOL CONTEXT AND STUDENT ATTITUDES

Social and Personality Factors Influencing Learning from Television

P. M. EDGAR

This study examines the social context of learning from television and film media. It provides a cross-cultural validation of Coopersmith's Self-Esteem Inventory and uses an experimental field setting to test children's reactions to film violence. This is related to both social background variables and teacher perceptions of the child through survey and interview data. Findings indicate that teacher perceptions and the child's measured self-esteem do not match up, being mediated through academic performance. Perceptions of media presentations differ for adult and child and relate to previous experiences. Self-esteem and education are complexly related.

School Related Alienation: Perceptions of Secondary School Students

RICHARD C. KUNKEL, Ball State University
JAY C. THOMPSON, Ball State University
JAMES H. McELHINNEY, Ball State University

The degree of school-related alienation in secondary school pupils and student perception of this alienation was examined. As part of a larger curriculum evaluation in northwestern Indiana, beginning in March 1970 and ending in August 1972, 15,000 secondary students in 23 schools were surveyed by questionnaires and systemic interviews. The resulting evaluation is based upon the description of what pupils, teachers, and other school personnel think is happening in schools. The level of alienation among students surveyed varied in the different schools studied. This study indicates there is little evidence of present practices to minimize such alienation, and offers suggestions to reduce the alienation in those schools surveyed.

A Comparison of the Relevance of Education in Three City High Schools: Black, White, and Integrated

I. JEFFREY PTASCHNIK, The Pennsylvania State University

This study investigated differences among city schools, differentiated by racial composition, in what was classified as relevant or irrelevant in the educational program. Q-sorts measured: (1) what students wanted out of school, and (2) what they believed they were getting out of school. Relevance was estimated as the degree of congruence between the sorts. The findings indicated that there were differences between the schools in what was classified as relevant or irrelevant and that an item could be classified as irrelevant for different reasons. It was concluded that efforts toward making school more relevant should be geared to the local school.

Participation in Student Activities as a Variable in the Educational Attainment and Expectation Process

RICHARD A. REHBERG, SUNY Binghamton, and WALTER E. SCHAFER, University of Michigan

Four-wave, five-year longitudinal panel data are used to assess selected antecedents and consequences of participation in student activities. Path analysis reveals that the "early" or freshman year educational expectations of high school students are a critical determinant of participation. Measured intelligence is also a determinant of senior year participation for males and females but only for females during the sophomore year. Parental achievement socialization practices exert a direct effect on participation but only for males. Both educational attainment subsequent to the completion of high school and educational expectation level during the senior year are directly dependent upon participation. Sex differences in the determinants of participation lead to inferences regarding the meaning of participation for males and for females.

Contrived Role Playing and Attitude Change

HENRIETTA SCHWARTZ, University of Chicago

This study asked whether structured role playing and attendant task experiences in extracurricular play productions were predictably associated with attitude changes in high school students. The major hypothesis was that play participation students would become more openminded and flexible, would show greater change toward more positive attitudes about self, others, teachers, achievement, and cultural relativism than students in debate activities or nonparticipants. Quantitative data anlayses supported the hypothesis at the .05 level. Qualitative data revealed which task experiences contributed most to positive change. The study suggests system changes and reallocation of resources if schools are to promote positive values.

37.05 LEARNING RULES AND CONCEPTS (C)

Venn Diagrams as Mediators of Rule Learning

BYRON M. WAGNER, Millersville (Pennsylvania) State College, and VERNON S. GERLACH, Arizona State University

A two stage transfer paradigm was used to investigate three areas of rule learning: (1) Venn diagrams as transformational mediators; (2) ease of learning the complementary rules, biconditional and exclusive disjunction; and (3) effect of constructed versus multiple-choice Venn diagrams on transfer. The results indicated that the use of Venn diagrams in prior training significantly ($P = .004$) facilitated the learning of a new rule on the transfer task. However, no significant difference was found between constructed versus multiple-choice Venn diagrams, and no significant difference was found in the difficulty of learning the two complementary rules, biconditional and exclusive disjunction.

The Effects of the Availability of Objectives and/or Rules in a Learner-Controlled Computer-Based Task

STANLEY J. KALISCH, PAUL F. MERRILL, NELSON J. TOWLE, and MICHAEL H. STEVE, Florida State University

One hundred thirty Ss were randomly assigned to one of the following four groups: example-only; objective-example; rule-example; or objective-rule-example group. Significant differences for within task and post-task performances were obtained with Ss who received rules performing more efficiently and more successfully than Ss without rules. The availability of objectives increased within task latency, but failed to affect post-task performance. Hence, in a learner-controlled rule learning situation, the presentation of rules seems to be a more effective instructional strategy than the presentation of objectives.

Anxiety Interaction with Task Difficulty Levels, Memory Support, and Estimated Task Competency in a Concept Identification Task

RICHARD C. BOUTWELL, Bucknell University

The interaction of anxiety, memory support, and task difficulty was investigated using a factorial design with covariate and anxiety profile analysis. One hundred and sixty-eight subjects were divided into high, medium, and low anxiety according to their pretreatment anxiety measure. Also measured was the interactive effect of anxiety and self-rating of response accuracy. Using two levels of task difficulty, which required subjects to identify RX_2 crystals following a prompted definition of negative and positive instances, it was found that in a nonfeedback concept task, memory support is associated with higher performance scores, and that low anxious subjects overestimated performance while high anxious subjects underestimated performance.

The Effects of Adding Emphasis of Relevant Attributes and a Concept Definition to a Rational Set of Concept Examples and Non-Examples

KATHERINE VORWERK FELDMAN and HERBERT J. KLAUSMEIER, Wisconsin Research and Development Center for Cognitive Learning

The effect on concept learning of presenting the "rational set of teaching examples and non-examples" as defined by Markle and Tiemann (1969) was compared to presenting the rational set in conjunction with either (1) a concept definition, or (2) a definition and emphasis of relevant attributes. It was hypothesized that subjects performance would improve significantly as the amount of information given increased. Results showed that providing the rational set with a concept definition did produce significantly better performance than the rational set alone ($p < .02$), but there was no difference due to the addition of emphasis of relevant attributes.

Vicarious Transfer of Affirmative and Relational Concepts

RICHARD T. WALLS and STANLEY H. RUDE, West Virginia University

The present experiment compared direct and vicarious transfer in the attainment of affirmative and relational concepts. Second and third grade children were randomly paired as model and observer. The latter observed his yoked model solve the initial two dimensional problem before solving the intrarule transfer task himself. No differences in solution difficulty were apparent in the affirmative (color) versus relational (size) comparison. Children of this age may have equal facility with these concepts even though relational values are learned later than affirmative ones. Models showed significant positive transfer for relational and affirmative concepts; however, observers did not.

37.06 STATE AND FEDERAL GOVERNANCE OF EDUCATION (A)

The Federal Policy Process and Educational Reform

HARRY L. SUMMERFIELD, Georgia State University

This paper is derived from a broadly focused study of the federal policy process for educational decision making. The original monograph, based on extensive interview data collected in the summer of 1971 describes the dynamic policy activities of Congress, the Adminis-

tration, and the lobby-petitioner sectors. The premise that any possible reform role played by the federal government in education must result from a redistribution of power in education is examined. The proposition is offered that both the configuration of power in education and the conservative nature of the federal policy process preclude vital federal intervention for educational reform in either the control of public education or the intrinsic character of the education process. As the federal role in educational finance grows, "federal interference" will decline leaving the state as the main arbitrator of any likely reform.

State Education Agency Planning: Impact of Federally Funded Programs

MIKE M. MILSTEIN, SUNY at Buffalo

The purpose of the study was to establish perceptions of selected groups about the impact of federal programs planning activities of State Education Agencies (SEA's). OE administrators and SEA administrators, local school district administrators and professors of educational administration in 18 states were mailed a 31 item survey instrument. Results of the survey indicate that SEA planning is constrained by the late passage and funding of federal programs as well as the SEA's own insufficient needs assessment, objective setting and long-range planning. Variations existed when SEA's were subgrouped according to size, geographical region and elected versus appointed superintendents.

State Governmental Structure and Education Policy Decisions: A Statistical Exploration

TIM L. MAZZONI JR. and ROALD F. CAMPBELL, The Ohio State University

The objective of the study was to explore through the correlational analysis of aggregate data the relationships between state governmental structure and education policies. More than thirty indices were developed in three categories: (1) environmental conditions, (2) political system characteristics, and (3) policy outputs. Data from many published and unpublished sources were gathered. Zero-order correlations, partial correlations, and standardized regression coefficients were computed to estimate the relative influence on education policy of state governmental structure. While the statistical treatment has not been completed, it should both contribute to our knowledge of structure and policy relationships, and give focus to subsequent research.

37.07 TEACHER NEGOTIATIONS: PROBLEMS AND PROCESSES (A)

Local-Cosmopolitanism and Collective Bargaining in a State College System

ROBERT B. BRUMBAUGH, Kutztown State College, and VICTOR E. FLANGO, Northern Illinois University

The objectives of this empirical study were (1) to determine to what degree Gouldner's typology of local-cosmopolitan latent social roles would be reproduced in a survey of the 14 institutions comprising Pennsylvania's state-owned college and university system, and (2) to determine whether the resulting typology would be useful in predicting the attitudes of these faculties and administrators toward Pennsylvania's recent negotiations legislation enabling the state college faculties to organize for collective bargaining. Five of Gouldner's six factors were recovered from 813 responses to a 73-item questionnaire survey mailed to a stratified random sample of faculty and administration at these 14 institutions five months prior to the statewide election for bargaining representative. The survey poll predicted the outcome of the election.

An Analytical Model of Collective Bargaining in School Districts

R. GORDON CASSIDY and ANTHONY M. CRESSWELL, Carnegie-Mellon University

Educational policy making and resource allocation have become closely linked with teacher-school board collective bargaining. This research is designed to develop a model of that process, leading toward improving of its structure and efficiency. Data from 400 Pennsylvania school districts were analyzed to construct a model of collective bargaining outcomes,

$$O_i = (f(C_i, P_i)$$

where O_i was the bargaining outcome in district i; C_i was the variable describing the context within which the bargaining took place; and P_i was the variable which described the process. The model is estimated by regression techniques, then examined for feedback effects, relative importance context, and process variables.

Prediction and Comparison of Teacher and Administrator Attitudes Toward Collective Negotiation Issues

CECIL G. MISKEL, The University of Kansas

Demographic variables, satisfaction, voluntarism, and primary life interests were used to predict and compare teacher and administrator attitudes toward the importance of bargaining issues. Research instruments with adequate reliabilities were developed to measure the foregoing variables. The data were analyzed using regression analysis and analysis of variance procedures. A return of 847 (79.7%) was received from the sample of 1,075. The explained variance of the five attitude factors ranged from 5.9 to 10.9%. The two groups also differed on the five factors. The findings question existing anecdotal, empirical, and conceptual bodies of knowledge relating educator attitudes toward collective negotiation issues.

Role Conflict, Role Ambiguity and Motivation to Work of Professional Negotiators in Education

ROBERT E. MEDFORD, and CECIL G. MISKEL, University of Kansas

The investigation examined the relationship among role conflict, role ambiguity, and motivation to work of teacher-negotiators. The theoretical rationale for the study was formulated from the findings of Walton and McKersie, Deutsch, Vidmar and McGrath, and Blum concerning the negotiator's conflict with the adversary, his dependence on his representative group, his personal role in the negotiation process and his desire for job security and stability. The sample included 191 negotiators and 247 non-negotiators. Data analysis procedures included discriminant analysis and analysis of variance. A quasi-factor describing the differences between negotiator and non-negotiator groups was developed from the research findings.

37.08 THE ANALYSIS OF EDUCATIONAL POLICY: A PROGRESS REPORT (A, SYMPOSIUM)

DONALD M. LEVINE, Teachers College, Columbia University, Organizer

Many recent technical developments have improved our ability to conduct rigorous policy analyses for education. Yet such analyses are usually conducted outside of the school system's administrative context and fail to impact on the policies actually formulated. Despite

methodological progress, certain internal difficulties and external barriers have undercut implementation of even the most user-oriented analyses.

This symposium will examine those internal difficulties, explore the important barriers, and suggest ways to overcome both obstacles. The methodology is strongly interdisciplinary: reports on the state of educational policy formation will be presented from the viewpoints of the politics of education, system analysis, anthropology, and policy science. This array represents not only a range of methodologies, but also a marked preference for either a quantitative or a qualitative approach.

The first paper, "The Politics of Education—Its Potential Contributions to Policy and Planning," by Laurence Iannaccone of the University of California at Riverside, holds that a distinction needs to be made between the orientation of a descriptive and analytical political science of education, and a policy and planning orientation. The former can contribute to the latter in several ways: (1) The politics of education as a field of study is what it is today because of an action-change orientation shared by most of its contributors; (2) It has produced substantive information over a decade which is useful in analyzing and influencing educational policy. This information may be especially useful as it speaks to: (a) the issues of intergovernmental relations, (b) the relative influence of educational empolyees vs. public influence on policy, (c) the influence of politico-cultural contexts on policy, and (d) the utility of political vs. organizational models in guiding policy and planning as seen in the interface of educational administration and the politics of education; (3) Methodological implications for guiding policy are also addressed, as well as the implications of research in the politics of education for comprehensive evaluation of school districts.

"Quantitative Analysis in Educational Policy Making: Problems and Promise," by Guilbert C. Hentschke of Teachers College, Columbia University, and Sue A. Haggart, The Rand Corporation, begins by briefly summarizing the range of quantitative models which may have utility as aids in formulating educational policy. It will include, but will not be limited to, general forecasting simulations, Bayesian strategies, general linear programming models, micro-economic analysis (including production functions, frontier functions, and marginal analysis), Markov chains, and general cost benefit models, including rate-of-return analysis. The models will be critically examined in terms of their general applicability to educational policy making.

The following topics are addressed: (1) assumptions inherent in specific models, (2) actual and potential applications of the models in formulating policy in education, and (3) problems inherent in applications of these models at the policy making level. From the analysis of problems, recommendations are set forth relative to: (1) what model builders can do to enhance the utility of quantitative models in the educational setting, and (2) what educational administration can do to critcally examine the potential for application of such models.

The third paper, "Values and Social Policy Formulation: An Anthropological Perspective on Finding Educational Policy," by Francis A. J. Ianni of Teachers College, Columbia University, argues that much of the debate and many of the policy questions which currently produce tensions in the educational system are the result of unrecognized or unresolved conflicts in values. Questions about whether schools should be integrated or segregated by race, by religion, by social class, or by intelligence are obvious value questions. But many of the other issues, such as the financing and organization of schools, the management and staffing of schools, and the delivery of educational system, are less obviously but probably more fundamentally grounded in values. Present approaches to policy study have tended to ignore the question of values and their role in structuring policy questions because of the lack of precision in dealing with qualitative areas such as values, and because current policy analysis tends to develop out of a quantitative methodology. This paper examines the use of a value structured approach to policy analysis and describes an anthropological approach to "finding" rather than "creating" social policy in education.

Finally, "Toward a Policy Science for Education," by Donald M. Levine of Teachers College, Columbia University, indicates that a crucial impediment to useful policy analysis is that education has been seen as an instrument of social policy, as a major social policy in itself, and as the generator of social policies. Confusion of these roles is an important barrier to developing a policy science for education. Equally important is the lack of any comprehensive and convincing mode of analyzing educational policy in a social context. This paper seeks to assess some major analytical approaches to educational policy formation, to suggest crucial research needs, and to make recommendations for the future development of policy analysis. After critically examining some traditional approaches to educational policy analysis, the paper indicates a need for more and better social—as opposed to economic—analysis. Our ability to conduct such analysis depends on more reliable knowledge of the input-process-output relationships in education, which must be gained by establishing a framework for experimental verification in the schools. At this time, cost-effectiveness analysis in a system analytical context seems the most promising method for implementing such a framework and for formulating educational policy.

37.09 PERSPECTIVES ON LEARNING FROM DISCOURSE (C, SYMPOSIUM)

H. PARKER BLOUNT, Georgia State University, Organizer

Much of the research on the learning and recall of connected discourse has pursued variables adjacent to the passage itself. For example, the influence of orienting stimuli, such as questions, has received prominent research attention. Fewer studies, however, have focused on variables inherent in the passage which influence comprehension and recall. The purpose of this symposium will be to examine variables specific to the prose passage that effect memory. Those variables influencing the learning and recall of discourse are the: (1) organization of the content material, (2) relationship among semantic dimensions, (3) syntactic determinants, and (4) relationship between syntactic structure and semantic content. This symposium will provide an opportunity to explore the characteristics of the linguistic unit which influences comprehension and memory storage. Consideration of the factors of extended linguistic units that are significant in human information processing should serve to further our understanding of verbal behavior involved in learning from meaningful discourse.

"Dimensions of Textual Prose and Remembering" will be presented by Ronald E. Johnson, Purdue University. During the last five years, a number of studies have examined the relationship of various semantic dimensions to the recall of textual prose. This report synthesizes these studies and provides data on the independence of these textual dimensions in predicting remembering. Four samples of learners, ranging in size from 61 to 46, read one of two textual passages, and attempted recall of their passage either immediately or after seven days. After raters (N=52) objectively partitioned the passages into psycholinguistic units, the written reproductions of the learners were scored to determine which units were remembered.

Additional independent samples of raters, ranging in size from 99 to 48, judged the two textual passages on one of the following dimensions: structural importance, meaningfulness, predicted recall, abstractness-concreteness, specificity of denotation, comprehensibility, and interest. Ratings were made on seven-point dimensional scales and also by the method of elimination. Each of the textual dimensions was strongly related to both immediate and delayed recall. Multiple regression analyses and factor analyses provided evidences of at least three independent dimensions of textual prose.

H. Parker Blount, Georgia State University, will present a paper entitled "Syntactic Determinants of the Recall of Sentences in Prose." One of the factors influencing the memory storage and retrieval of

connected discourse is syntax. Syntactic cues apparently can serve as markers that influence the pattern of information encoded in memory. The purpose of this paper will be to review the significance of several syntactic variables which effect the cognitive processing of prose passages. Specifically, the influence of expressing a sentence in the active voice or its passive transformation on prose learning will be considered. The relationship between the logical and psychological subject of a sentence will be discussed as related to the active-passive transformation. The effect of sequencing events (temporal order) within a linguistic unit as determinants of recall will be examined. The effects of voice transformation and temporal order on recall from both spoken and written discourse with differing age Ss will be considered.

"The Influence of Syntax and Semantic Structure on Remembering Paragraphs" will be discussed by Edward J. Crothers, University of Colorado. In comprehension and memory, organization is a two-sided coin. It refers both to representation in unobservable memory and to expression in observable linguistic forms, especially words, sentences, and paragraphs. Generative linguists formally derive the surface forms from the deeper ones, but in everyday comprehension we proceed in the opposite direction. Be the direction inward or outward, an understanding of the intellectual aspects is contingent on an understanding of the syntactic and semantic aspects.

Present research focuses on the syntax and semantics of individual paragraphs, and on how this structure influences comprehension and memory. The theory as it is now being formulated yields what might be called a "graph-table" as the structural description of a paragraph. It captures both the syntax and the semantics, as well as the topic and the comments. An experiment will be described on how a person's ability to recall the ideas of a paragraph depends on its structure, its sentence order, and on the presence or absence of an accompanying abstract.

"Logical Structure Variables and Their Effects on Recall from Prose" is the title of a paper by George W. McConkie, Cornell University. Recently there has been a great interest in how word lists are organized in learning them, and the effect this has on subsequent recall. Attempts by the author and by others to study similar problems with prose are reviewed. These attempts include simple extensions of methods used with word lists as well as other quite different techniques, methods that attempt to reveal cognitive structure as well as those which try to affect cognitive structure through the manipulation of tasks and materials, and studies which failed as well as some which seem to have succeeded in finding relationships between the logical structure of prose and its recall.

4.21 & 15.26 THE TESTING OF BLACK STUDENTS (AERA Special Two-Part Symposium)

LaMAR P. MILLER, New York University, Organizer

One of the most controversial issues affecting the education of black children has been the role of educational and psychological testing in American life. While much of the argument has centered on the nature of intelligence tests and the conditions of administration, the underlying issue concerns the question of whether or not the differences in IQ scores between blacks and whites are hereditary or environmental. Differences in the interpretation of research efforts have had serious social and political consequences. Moreover, the question has been raised as to whether or not the heredity-environment argument is peripheral to the issue of testing.

It is clear that the complicated questions surrounding the issues are deeply embedded in two historical frameworks which must be considered in placing the discussion in proper context. The first is the more than 300 years of slavery and subjugation of black citizens in the United States. White supremacy theories have been perpetuated in historical, sociological, and psychological studies, often by the most influential scholars. The other historical framework is the development of psychometrics in the United States. This development has been contaminated by political questions relating to public policy as well as emotional, often racist, attitudes which color such considerations.

Even though considerable attention has been given to testing and the public interest, science has been unable to yield clear-cut answers to questions of increasing complexity regarding the testing of black students. In fact, the social consequences of testing, a relatively new area of interest, have been intensified by widespread criticism in the mass media of tests and testing. Since 1964, however, some empirical studies have been conducted; guidelines and standards for test development have been sponsored and endorsed; symposia have been held, and special journal issues which were devoted to the question of testing in the public interest have appeared. Some psychometricians and statisticians have reacted to the present dilemma in terms of the job they have been assigned to do, i.e., to screen and predict or measure achievement. Others have taken the position that there are social ills to be remedied and tests, as currently designed and used, contribute to the perpetuation of these social ills, and still others, particularly blacks, have sparked a movement to get rid of biased tests in schools and research projects.

The purpose of this symposium is to clarify and discuss the issues surrounding the testing of black students so that a point can be reached from which steps toward real progress may be made. The symposium will focus on the following issues as they relate to the testing of black students: the psychometric point of view, social and educational problems, the position of educators regarding the heredity-environment issues, testing and general educational policy, and a blueprint for educational testing programs of the future.

Specific questions to be discussed by participants include: (1) How is test bias defined and measured? (2) How well do tests predict and measure school achievement? (3) Are there some beneficial effects of testing for black pupils? (4) What tests are not measures of the worth of a person? (5) What are the misuses of tests and how can they be avoided? (6) What is the influence of examiners on testing? Other questions are: (1) Do schools tend to represent middle-class culture? (2) Should they? (3) Should schools attempt to provide a common experience? (4) If so, what should it be, or how should it reflect the varying make-up of our population? (5) Should there be homogeneous grouping—on the basis of tested ability or anything else? (6) What facts are available regarding the heredity-environment issue, and do they add up to anything valuable for educational policy? (7) Should there be discouragement of further study concerning the heredity-environment issue? (8) If any one of a variety of conclusions was supported by research regarding the heredity-environment issue, what effect should it have on education? And finally: Is testing the place where reform should begin? What would be the effect of an immediate abandonment of testing, either for all pupils or for black pupils? Should tests be exclusively diagnostic, never evaluative? What should replace biased tests? Are there locators and criterion tests to help black children? To what extent should we investigate test abuse? Symposium participants are: Ronald Flaugher, Senior Research Psychologist, Educational Testing Service; Edgar Epps, Professor of Urban Education, University of Chicago; George Temp, Research Psychologist, Lafayette, California; Lawrence Plotkin, Professor of Educational Psychology, City University of New York; Robert Williams, Director of Black Studies, Washington University, St. Louis; Phillip Merrifield, Chairman, Division of Educational Psychology, New York University; Roger T. Lennon, Senior Vice-President, Psychological Corporation, New York City; Warren Findley, Professor of Education and Psychology, University of Georgia; John Dill, Director of the Early Childhood Research Center, New York University; E. Belvin Williams, Vice-President of Operations, Educational Testing Service.

TOPICAL INDEX

A

Accountability, 3.10, 13.08, 15.23, 25.03, 27.08, 29.14
  see also Evaluation
Achievement, 6.09, 8.07, 10.06, 15.19, 19.05, 25.08, 26.09, 26.21, 27.04, 29.08, 34.05, 36.20
Administrative Decision-Making, 15.28, 17.08, 28.18, 29.23, 32.01, 32.11, 37.06
AERA Orientation, 4.06
Affective Learning, 8.08, 8.11, 14.01, 15.03, 19.18, 26.14, 28.12
Alternative Schools, 7.02, 10.08, 26.15, 29.21, 33.04, 34.05
American Educational Research Journal, 17.23
American Indians, 28.09, 33.09
Assessment Programs, 4.20, 8.17, 19.12, 26.18, 27.12, 29.20
Attitudes, 19.05, 24.03, 25.09, 33.07, 34.20
  of Students, 6.13, 26.09, 29.11, 37.04
  of Teachers, 19.15, 28.20, 35.17

B

Behavior Modification
  and NSSE Yearbook, 29.03
  Ritalin, 29.13
Blacks, 4.21, 13.17, 17.04, 19.05, 19.26, 24.03, 25.19, 33.07, 34.04, 35.20, 36.12, 36.16, 36.17
Business Education, 13.16, 32.09

C

Career Decision-Making, 4.17, 6.16, 8.15, 10.10, 15.08
Career Education, 29.21, 32.05, 35.16
Chicanos 10.15, 34.07
Classroom Interaction, 2.02, 6.01, 13.19, 26.14, 27.09, 34.07, 35.18, 36.10
Classroom Observation, 3.08, 10.19, 26.08, 28.21, 29.02, 29.15, 33.10
Cognitive Learning, 3.04, 4.08, 4.17, 4.18, 6.11, 8.08, 15.03, 28.26
Community Colleges, 2.07, 6.13, 6.14, 12.02, 13.04
  Accountability in, 15.23
  and Ethnic Relations, 37.01
Community Involvement in Education, 19.03, 20.07, 24.02, 27.01, 29.10, 35.16
Computer Applications, 4.16, 4.17, 14.06, 14.13, 15.17, 19.26, 25.04, 26.10, 29.20, 29.22, 35.24
Computer-Assisted Instruction, 10.01, 25.20, 28.05, 29.06
Computer Simulation, 14.03, 14.12, 32.01, 33.11
Concept Formation, 3.04, 4.08, 4.18, 6.11, 14.11, 15.12, 37.05
Counseling
  Client Interaction, 2.08, 14.03, 15.13
  Goals, 10.10, 19.22
  Methods, 2.08, 10.15, 15.08
  Programs, 4.10, 19.22, 19.25
  Rehabilitation, 20.01
  Training for, 2.08, 10.10, 14.03
Criterion-Referenced Measurement, 3.09, 8.12, 14.02, 17.10, 25.13
Curriculum
  Change, 14.06, 19.02, 19.03, 27.21, 34.02, 35.02
  Decision-Making, 24.02, 36.07
  Development, 3.14, 4.01, 17.19, 19.09, 26.03, 26.05, 34.19, 36.07
  Evaluation, 6.02, 19.04, 27.06, 33.01, 35.03
  Theory, 19.27, 33.03, 35.04

D

Decision-Making
  see Educational Policy Formation, *and* Administrative Decision-Making
Disadvantaged, 10.11, 15.02, 19.18, 35.11, 36.16
  Educable Mentally Retarded, 20.23, 35.22
  Follow Through, 20.26
  Handicapped, 14.05, 15.24, 28.13, 34.11
  Head Start, 19.14

E

Early Childhood Education, 19.14, 20.26, 24.01, 34.03
Educational Administration
  Blacks in, 17.04, 34.04
  Crisis Management, 24.05
  Teaching of, 13.10, 20.10, 28.17, 29.25, 32.04, 36.05
  Year Round Schools, 36.02
Educational Communication, 8.05, 10.04, 19.03, 20.07
Educational Goals, 25.01, 33.06, 34.01, 34.02, 34.06, 36.07
Educational Innovations, 2.04, 3.01, 27.01
  Evaluation of, 14.10, 19.21, 29.01
  Implementation of, 2.09, 4.12, 26.02, 28.01, 32.02, 35.15, 35.19
  Planning for, 6.17, 14.06, 17.15, 32.06, 34.19, 35.24
Educational Opportunity, 7.01, 10.11
Educational Policy
  Administrative 25.19, 29.25, 35.05
  Analysis, 32.04
  Federal, 10.18, 15.04, 15.28, 37.06
  Fiscal, 17.05, 35.08
  Formation of, 19.11, 27.15, 28.07, 29.10, 32.11
  Public, 20.06
  as a Science, 37.08
Educational Products
  Demonstrations of, 32.10
  Development of, 15.01
  Evaluation of, 10.13, 15.06, 19.07
Educational Research as Disciplined Scholarship, 13.09, 13.13, 20.19, 26.03, 34.10, 34.18, 35.12, 36.05, 36.09
Environmental Stress, 13.07
Ethnic Influences, 6.02, 6.18, 10.15, 15.13, 28.09, 33.07, 34.07, 36.12 36.16
  on College Admissions, 19.16
  on Communication, 25.19, 37.01
  on Learning, 19.05, 33.06, 35.20, 36.17
  on Student Attitudes, 24.03, 25.09, 26.20
  and Tests, 20.12, 20.17
Ethnic Studies, 7.01, 36.12
Evaluation
  Formative, 6.10, 10.13, 28.14
  of Instructional Programs and Systems, 3.10, 4.19, 4.20, 6.02, 8.17, 14.04, 15.02, 15.05, 19.18, 20.26, 33.01, 34.03
  Methodology, 3.09, 6.18, 10.14, 17.12, 36.11
  Models, 2.04, 4.17, 8.18, 10.19, 14.09, 14.10, 14.14, 15.06, 19.12, 26.08
  and Policy, 10.18, 15.28, 17.02, 19.10, 29.01
  Theory, 24.04, 28.15
  Training for, 8.22, 26.22
Expectancy
  Effects of Teacher, 13.15
  Student, 24.03, 37.04

F

Family Influences, 36.18
Federal Policy, 10.18, 15.28, 28.23, 37.06
Feedback
see also Reinforcement, 15.27, 25.08, 25.11
Field Studies, 4.20, 17.12, 26.18, 28.01, 29.24, 34.05

G

Grouping, 20.21, 35.10

H

Higher Education
College Admissions, 19.16
Disruptions, 16.02
Drop-Outs, 6.13
Governance, 28.18
Placement vs. Credit, 35.05
Policy Issues, 27.15
Students, 4.17
Student/Faculty Attitudes, 25.09
Theory of, 36.01
Historical Perspective, 3.03, 9.01, 14.07, 16.01, 18.01, 20.16
Homosexuality, 13.06
Humanistic Education, 3.06, 25.07, 28.02, 29.14

I

Individual Differences, 6.03, 8.13, 15.20, 25.20, 26.23, 27.10, 27.20, 29.12
Individualized Instruction,
see Learning
Information Systems, 27.15
Instructional Effectiveness, 4.11, 6.12, 13.19, 15.18, 15.19, 26.01, 26.06, 33.08
Instructional Materials, 4.12, 16.02, 36.14
Instructional Models, 15.17
Instructional Objectives, 4.01, 19.07
Instructional Styles, 3.01, 4.01, 4.09, 26.10, 27.10, 28.05, 36.14
Instructional Systems, 4.15, 4.19, 8.16, 15.05, 17.17, 25.04
Instruments, 3.07, 6.18, 14.13, 14.14, 19.24, 26.13, 26.14, 27.08
International Research, 6.09, 29.08

L

Language Development, 4.07, 6.07, 35.20, 36.17
Leadership, 34.04, 35.07
Learning
Associative, 20.24
Disabilities, 33.13
Discrimination, 6.04, 13.15
Environments, 4.09, 13.07, 17.17, 24.01, 27.15, 34.20
Games, 19.19, 32.01
Individualized, 4.09, 4.12, 8.02, 14.04, 15.10, 26.06
Rule, 15.17, 37.05
Stimuli, 4.17, 20.24, 35.21
Verbal, 4.07, 6.07, 10.07, 15.16, 29.12, 34.17, 36.13, 37.09
Longitudinal Studies, 2.05, 6.15, 10.10, 19.14, 20.26, 26.14

M

Management, 17.05, 25.16, 27.17, 37.07
Mathematics
Learning, 3.14, 19.06, 19.17, 20.08, 27.05, 33.05
Teaching, 14.13, 17.14, 26.19
Measurement
in American Indian Settings, 33.09
of Creativity, 10.20
General Methodology of, 10.14, 10.16, 10.20, 17.11, 20.11, 20.13, 25.14, 26.14, 27.16, 27.18, 36.11
of Intelligence, 20.12
Models, 14.13
Prediction, 4.14, 14.13, 20.14, 36.18
Qualitative, 20.18
Reliability, 19.20, 26.16
Theory of, 25.02, 29.22, 34.15
Validity, 26.17
Medical Education, 15.16, 26.14, 36.15, 37.02
Microteaching, 8.21, 34.14, 35.18
Mini-Training Courses, 10.13, 19.26, 28.25, 29.04
Motivation, 25.01, 26.09

N

National Institute of Education, 30.01
Non-Traditional Instruction, 10.01, 17.20, 36.19

O

Occupational Prestige, 6.16, 8.15, 15.11, 19.25
Open Classroom, 17.13, 17.20, 19.11, 28.11, 33.10, 36.19
Organizational Structure, 15.10, 26.15, 28.18, 28.20, 29.23, 35.07
Change, 20.10, 20.20, 25.16, 32.02, 32.06
Conflict, 27.17
Development, 15.27, 17.08

P

Performance Factors, 3.11, 6.09
Piagetian Theory, 3.04, 4.08, 15.12, 19.08
Planning, 17.02, 19.10, 27.17; 27.21
Policy
see Educational Policy
Politics of Education, 15.04, 25.10, 28.23, 35.11, 35.15, 37.08
Pre-School Children, 8.13, 15.03, 19.05, 19.25, 28.26, 34.03, 35.09
Pre-Service Education
see Teacher Training
Private Schools, 26.15
Problem Solving, 14.11, 15.12, 15.16, 19.08, 25.02, 26.13, 27.05, 28.04
Program Development and Evaluation, 4.19, 6.10, 8.12, 19.07, 19.12, 26.11, 28.12, 28.13, 32.05
Programmed Instruction, 19.19
Public Education, 28.16
Pupil Control, 2.02, 28.16

R

Reading
Abilities, 6.08, 8.09, 10.09, 15.25
Achievement, 6.04
Assessment, 8.12, 27.12
Current Research, 4.02, 6.19, 36.08
Readability, 10.03, 27.02
Recall, 10.07, 14.13, 28.19, 36.13, 37.09
Reinforcement, 25.11, 29.15
Renewal Events, 36.09
Research Needs
Career Development, 2.06, 13.01, 20.01
Educational Innovations, 35.15
Health Care, 26.14

Teacher Education, 8.01, 24.06
Year Round Schools, 36.02
Research Utilization, 2.09, 6.05, 8.05, 10.04, 12.01, 19.11, 19.20, 24.05, 26.11, 28.07, 34.10, 34.16, 35.19
Role Modeling, 10.15

S

Scaling Techniques, 3.08, 17.10, 20.11
School/Community Relations
see Community Involvement
School Finance, 35.08
Self-Concept, 8.11, 14.01, 15.03, 17.20, 19.05, 34.07, 36.19
Sex Bias, 17.06, 19.16
Sex Differences, 6.13, 8.09, 17.06, 19.06
Social Development, 6.15, 6.16, 8.13, 10.10, 14.01, 14.08, 19.14, 26.14, 29.11
Social Effects, 16.01, 28.07, 34.02, 34.08, 34.16, 35.04, 35.11, 35.17, 36.10
Social Studies Education, 2.03, 6.02, 19.15, 25.18, 26.04, 28.02
Special Education, 10.08, 33.13
State of the Art
Administration of Organizational Change, 20.10
Career Development, 2.06, 13.01
Computer Narrative Assessment Reports, 29.20
Educational Mentally Retarded, 20.23
Educational R&D Training, 34.18
Factor Analytic Methodology, 2.05
Reading Research, 4.02
Teaching Effectiveness in the Language Arts, 15.18
Statistical Procedures, 4.16, 14.13, 15.07, 17.07, 17.11, 26.14, 27.13
ANOVA, 20.13
Factor Analysis, 2.05, 27.18
Item Calibration, 28.25
Matrix Sampling, 10.16, 19.23, 26.14
Multiple Linear Regression, 28.24
Multivariate, 25.17, 29.04
Time Series, 3.09
Student Behavior, 8.02, 20.21, 25.19, 26.20, 27.08, 29.13, 34.08
Survey Research Methodology, 15.27, 29.24

T

Teacher Characteristics
Attitudes, 19.15, 28.20, 35.17
Militancy, 35.07
Mobility, 27.17
Personality, 25.10, 27.07, 36.19
Teacher Evaluation, 3.10, 15.09
Measurement Techniques, 19.11, 25.15, 27.11
by Students, 17.10
Teacher Organizations, 25.10, 37.07
Teacher Performance, 4.11, 6.01, 8.07, 10.06, 15.09, 15.18, 19.01, 24.06, 26.01, 27.09, 36.19
Teacher Training, 3.12, 4.17, 6.17, 8.16, 8.21, 15.01, 15.22, 25.07, 26.07, 26.19, 29.17, 32.07, 32.10, 33.05, 34.11, 34.14, 35.17, 35.18
Competency-based, 4.03, 8.01, 19.01, 27.08, 34.09
Evaluation as Input Data, 14.09, 19.11, 35.03
Performance-based, 17.22, 24.06
Tests, 3.07, 4.14, 4.21, 14.02, 15.14, 17.22, 19.20, 19.23, 19.24, 19.26, 20.12, 20.17, 25.14, 26.16, 26.17, 27.12, 36.20
Theory of Instruction, 4.09, 33.03, 35.21, 36.01, 36.04, 37.03
Training
see also "Mini-Training Courses"
of Educational Researchers, 13.09, 13.13, 28.17, 34.18, 36.05
of Evaluation Specialist, 8.22
of Physicians, 26.14
R&D Models, 26.22
Theory of, 25.02

U

Urban Education, 5.01, 15.02, 17.04, 25.12, 26.20, 29.21, 29.23

V

Vocational Education, 13.03, 20.09

W

Women
Career choice, 3.02, 6.13, 8.15
Caucas, 8.04
Education of, 3.02, 26.12
and Educational Research, 34.10
Pi Lambda Theta Award, 4.04
Role Identification, 8.15

INDEX OF INDIVIDUAL PAPER TITLES

Abilities Measured by the Purdue Elementary Problem Solving Inventory ... 26.13
An Abstract Test of Problem Solving Ability ... 26.13
The Academic Department Game ... 32.01
Accountability in Compensatory Education ... 17.05
The Acquisition of Conservation Through the Observation of Conserving Models ... 3.04
Actualities of Individualisation in British Primary Schools ... 34.20
Adaptation Within a CAI Program on Basic Arithmetic Skills ... 29.06
Adapting Word Association for Use as an Evaluation Technique 3.07
Adolescence and Social Reform in Historical Perspective ... 9.01
Adolescent Competence and Educational Ambition ... 36.18
The Advantageous Uses of Part-Whole Correlations for the Reduction of Standardized Test Batteries ... 4.14
Affective and Cognitive Correlates of Classroom Achievement: Research for the Counselor ... 15.03
Aligning Components of Intelligence and Learning Performance: A Proposed Rationale for Educational Intervention 14.13
Alternative Strategies for Pre-Service Education Programs ... 26.07
An Alternative to Ability Grouping: Personality Grouping ... 20.21
An Alternative to Readability Measures: Judging the Difficulty of Childrens' Trade Books ... 15.25
Ambiguities in Race Relations: Blacks and Whites in Higher Education ... 25.09
The American Youth Movement: Ideal and Reality, 1890-1945 14.08
Analysis and Improvement of Reading Comprehension with Task-Oriented Prose ... 15.25
An Analysis of Aptitude as a Predictor of Achievement in an Individualized Mode of Instruction ... 26.06
An Analysis of a Guaranteed Achievement Program to Achieve Specific Educational Objectives, or Performance Contracting, Chicago Style ... 15.02
An Analysis of Learning Efficiency by Mode of Instruction When Related to Reading Speed and Comprehension ... 27.10
An Analysis of Mathematical Competencies Necessary for Certain Health Occupations ... 36.07
An Analysis of Oral Reading Behavior of Reflective and Impulsive Beginning Readers ... 6.11
An Analysis of Personality Variables in Individual Modes of Instruction ... 26.06
Analysis of Polychotomous Response Variates ... 29.22
Analysis of Rank Data with Tied Values (An Examination of the Rank Ordering of Eight Definitions of Integration by Graduating Seniors in a Desegregated Northern School) ... 15.07
An Analysis of the Relationship of the Multiunit School Organizational Structure and Individually Guided Education to the Learning Climate of Pupils ... 15.10
Analysis of Variance Through Full Rank Models ... 20.13
Analysis Strategies for Some Common Evaluation Paradigms ... 17.12
An Analytical Model of Collective Bargaining in School Districts 37.07
An Analytical Pragmatic Structure of Procedural Due Process: A Framework for Inquiry into Administrative Decision Making ... 17.08
Anticipation of Cognitive Behavior of Mentally Retarded and Normal Children ... 20.23
Anxiety Interaction with Task Difficulty Levels, Memory Support and Estimated Task Competency in a Concept Identification Task ... 37.05
An Application of Criterion-Referenced Testing ... 14.02
Application of NAEP Writing Assessment Procedures in Montgomery County, Maryland ... 8.17
Application of the National Assessment of Educational Progress Philosophy in San Bernardino City Schools ... 8.17
Application of Teaching Performance Tests to Inservice and Preservice Teacher Education ... 17.22
Applying an Occupational Classification to a National Representative Sample of Work Histories of Young Men and Women ... 6.16
The Approach to the Design of the North Carolina Statewide Assessment of Educational Progress ... 4.20
Approximate Evaluation Techniques for the Max Hierarchical Clustering Procedure ... 15.07
Approximating Standardized Achievement Test Norms with a Theoretical Model ... 10.16
Aptitude Treatment Interaction Research with Learning Disabled Children ... 15.24
Arousal and Memory in Multi-Media Presentation ... 36.14
Articulation During Silent Reading ... 8.09
Artificial Intelligence Models for Human Problem-Solving ... 19.08
Aspects of Social Responsibility ... 20.14
Assessing Student Performance ... 14.04
Assessing Teacher Behaviors with Infants in Day Care ... 3.10
Assessment of Anxiety About Teaching Using the Teaching Anxiety Scale ... 3.08
Assessment of Ethnic Group Self-Concepts in a Desegregated/Integrated Urban Elementary School ... 6.18
Assessment of Ethnic Interaction in a Desegregated/Integrated Urban Elementary School Using Photography as an Observational Research Device ... 6.18
An Assessment of the Kuder-Richardson Formula (20) Reliability Estimate for Moderately Speeded Tests ... 26.16
Assessment of Selected Innovative Educational Practices by Professional Educators ... 14.10
Attention and Reading Achievement in First Grade Boys and Girls ... 6.04
Attitude Changes in Student Teachers as a Function of Type of Student Teaching Experience ... 32.07
Attitude of Male Gang Members Related to Innovative Education ... 26.20
Attitude Scale Evaluation: Ordering-Theoretic Model Versus Scalogram Analysis ... 3.08
Attitude Toward Education, Vocational Maturity, and Control of Environment in Relation to Nineth-Grade Achievement 19.05
Bakersfield: A Title III Evaluation ... 19.12
The Black Plateau ... 34.04
Black-White Student Interactions in an Urban Secondary School 25.19
A Bonferonni Confidence Interval Procedure for Non-Negative Variance Estimates ... 20.13
A Branching-Type Simulation Device for Studying Career Decision-Making ... 15.08
Can Compensatory Education Improve the Self-Image of Culturally and Socially Different Children ... 19.18
A Case for Using Factor Scores Rather than Summative Scores in Educational Research ... 27.18
A Case Study of a Statewide Assessment of Educational Priorities ... 19.12
A Challenge to the Need for High Survey Response Rates ... 29.22
Changes in Attitudes and Values of Adolescents from Different Cultural Groups during the High school Years ... 34.07
Change in Classroom Behavior from Fall to Winter for High and Low Control Teachers ... 2.02
Changes in First-Grade Achievement and the Predictive Validity of I.Q. Scores, as a Function of an Adaptive Instructional Environment ... 27.10
Change in Liberal Arts Colleges: Towards a Typology of Innovations ... 27.01

Changes in Organizational Climate Associated with Development and Implementation of an Educational Management System ... 25.16
Children's Memory: SES Differences in the Development of Serial Processing Ability ... 36.16
Children's Responses to Reading Standard English and Nonstandard Dialect Stories: A Study of Evaluation and Comprehension ... 35.20
Children's Responses to Well-Formed and Telegraphic Commands ... 4.07
Citizen Participation in Educational Innovation: A Conceptual Model ... 27.01
Classroom Achievement as a Function of Student-Teacher Interaction ... 25.08
Classroom by Classroom Analysis of the Impact of a Compensatory Education Program ... 15.02
Classroom Interaction Patterns During Microteaching: Wait-time as an Instructional Variable ... 35.18
Classroom Observation Scales ... 29.15
Classroom Practices and the Development of Political Efficacy ... 36.10
Client I: A Computer Program Which Simulates Client Behavior in an Initial Interview ... 14.03
A Clue to the Relationship Between "Learning" and "Liking" ... 35.21
Cluster Analyses of the SVIB, MVII and Kuder OIS as Tests of an Occupational Classification ... 6.16
Cognitive Strategies in Children's Comprehension of Text ... 29.12
Cognitive Style and Hypothesis Testing ... 6.11
Color/Form Preferences as a Function of Nursery School Experiences and Age ... 35.09
Community Action Agency and Educational Authority: A Theoretical Analysis of Interorganizational Politics ... 20.07
A Comparative Evaluation of an Experimental Program for the Preparation of School Principals in Terms of Placement Acceptability ... 14.10
Comparative Judgment Scaling of Student Course Ratings ... 17.10
A Comparative Study of the Philadelphia Leadership Program for Inner-City School Administrators at The Pennsylvania State University ... 34.04
Comparative Validation of a Direct and an Indirect Measure of Academic Self-Confidence ... 26.17
A Comparison Between Instructional Styles for First Graders ... 27.10
Comparison of Algorithms for Common Factor Analysis Using Maximum-Likelihood Estimation ... 25.17
A Comparison of Classroom Human Relations Problems Diagnostic Tendencies of Elementary and Secondary Teachers ... 2.02
A Comparison of Conceptual Strategies for Grouping and Remembering Employed by EMR and Non-Retarded Children ... 35.22
Comparison of Educators' and Industrial Managers' Work Motivation Using Parallel Forms of the Work Components Study Questionnaire ... 35.17
A Comparison of Experimental Group Guidance and Individual Counseling Methods to Facilitate College Students' Vocational Development ... 15.08
A Comparison of Human and Computer Grading of Essay Content ... 29.22
A Comparison of Idiosyncratic Study, Passive Reading and Inserted Question Treatments in Learning from Text ... 6.07
Comparisons of Learning Potential and IQ Measures in Three Levels of Ability ... 20.12
A Comparison of Open and Traditional Education: Conditions that Promote Self-Concept ... 17.20
A Comparison of Prompting and Adjunct Questions in Learning from Text ... 36.13
A Comparison of Ranking and Rating Methods by Multidimensional Matching ... 3.08
A Comparison of School Mean Achievement Scores with Two Estimates of the Same Scores Obtained by the Item-Sampling Technique ... 19.23
A Comparison of Selected Variables from the 1965 and 1970 Doctoral Dissertations of the College of Education, University of Maryland ... 4.17
A Comparison of Subjective and Objective Methods of Teacher Evaluation ... 8.16
A Comparison of the Degree, the Nature, and Some of the Causes of Manifest Anxiety in Children from Different SES and Racial Backgrounds ... 24.03
A Comparison of the Didactic Interactions of Mothers and Fathers with their Preschool Children ... 35.09
A Comparison of the Effectiveness of Remediation of Non-Readers by Trained Mexican-American Aides and Certified Teachers ... 6.08
A Comparison of the Effects of Rote, Principle, and Guided Discovery Strategies on Conceptualization in First Grade Children ... 6.04
A Comparison of the Relevance of Education in Three City High Schools: Black, White and Integrated ... 37.04
A Comparison of the Word Recognition Processes of Beginning and Experienced Readers ... 10.09
A Comparison of Three Strategy Approaches for Teaching Vocabulary Concepts to Retarded Children ... 35.22
A Comparison of Two Approaches in Factor Studies of Students Ratings of Courses and Instructors ... 17.10
Compensatory Prekindergarteners' IQ Gain Correlated with Third Grade Reading Achievement ... 28.26
A Compilation of Preschool Children's Word Frequency Counts ... 14.14
The Comprehension and Communication of Relational Concepts by Inner-City Children ... 36.17
Comprehension Objectives Derived by Linguistic Analysis of Primary Level Reading Materials ... 15.25
The Computation of Orthogonal Independent Cluster Solutions and Their Oblique Analogs in Factor Analysis ... 25.17
Computerized Analysis of Phonics Skills ... 4.17
The Concept of Institutional Memories for Courses ... 26.10
A Conception and Case Study of The Teacher as Choice Maker in Curriculum Development ... 17.19
A Conceptual Model for the Development of Map Reading Skills ... 4.08
Conceptual Systems and Educational Environment: Relationships Between Teacher Conceptual Systems, Student Conceptual Systems, and Classroom Environment as Perceived by Fifth and Sixth Grade Students ... 13.19
Concrete and Abstract Thinkers at Three Grade Levels and Their Performance with Complex Concepts ... 6.11
Concreteness and Imagery in Sentence Meaning, Revisited ... 34.17
Conditions Moderating the Self-Fulfilling Prophecy Effect ... 13.15
Confidence Interval Estimation of KR_{20}—Some Monte Carlo Results ... 26.16
Conflict and the Collaborative Process: Antecedents, Characteristics, and Consequences of an Inter-governmental Program ... 27.17
Conformity and Rebellion: Contrasting Styles of English and German Youth, 1900-1933 ... 14.08
Construct Validity of Test Items Measuring Acquisition of Information from Line Graphs ... 33.08
Contrived Role Playing and Attitude Change ... 37.04
Controlled Multivariate Evaluation of Open and Traditional Education at the Junior High School Level ... 19.21

Convergent, Divergent, and Esthetic Ability and Bias in College Students: Their Relation to Personality and Preference for Major Subject and Instructional Method 8.08
Convergent Validity of the IPAT Children's Personality Questionnaire and Teachers' Ratings of the Adjustment of Elementary School Children 26.17
A Conversational Access to Computerized Searches of the ERIC System 15.05
Correlates of Student Preference Ratings 6.17
Correlates of the Perception of Occupational Prestige 15.11
Cost Utility: An Aid to Decision-Making 19.10
Course Evaluation Schedule: Development and Crossvalidation 15.09
The Course Maintenance System, and Example of a Computer-Based Course Memory 26.10
Criterion-Referenced Validity of Student Ratings of Instructors 17.10
A Critique of the Statistical Analysis of the OEO Experiment in Performance Contracting 17.11
The Cross-Cultural Attitude Inventory: A Report on Item Analysis and Stability 19.18
Cross-Cultural Research and Teacher Preparation in the Urban Setting 6.17
Cultural Centers and Multi-Ethnic Education Media 28.09
Cultural Deprivation and Intelligence: Extensions of the Basic Model 36.18
Curricular Decision Making in Selected School Systems 17.19
Curriculum Criticism and Literary Criticism 35.02
Curriculum Decisions: A Theoretical Framework 36.07
Curriculum Evaluation And Literary Criticism: The Explication of An Analogy 27.06
Curriculum Legislation and Decision-Making for the Instructional Level 36.07
Decision Making at the Institutional Level 17.19
Defensiveness as a Covariate in the Assessment of Self-Concept Change 20.14
The Degree and Nature of the Relations Between Traditional Psychometric and Piagetian Developmental Measures of Mental Development 20.11
Demographic and Social Accounting: A Follow-up on the Withdrawals from Quebec Colleges and Universities 25.19
Departments: Problems and Alternatives 28.18
Design and Implementation of a Planning Process in a Large, Urban School System 19.10
Design and Use of An Information System To Support School Planning – Evaluation 19.10
Design of an Educational Environment with a Computer-Controlled Organ 26.10
The Design of Student-Controlled CAI Courses 26.10
Developing Empirical Predictors of Effective Leadership in Innovative Situations Using the Stepwise Regression Procedure 20.14
Developing Mathematical Materials for Student's Cognitive Style 6.11
Developing a Modular Secondary Educational Psychology Program–Minimal Resources 36.07
Developing Quality Assurance Systems for Instructional Programs 15.15
The Development and Effectiveness of Instruments for the Measurement of Classroom Teacher Accurate Empathy, Warmth and Genuineness 15.09
Development and Evaluation of One Strategy for Implementing Change in Schools 35.02
The Development and Evaluation of a System for the Design of Instructional Plans and Resource Allocation 14.14
The Development and Implementation of a Statewide Evaluation System 4.19
The Development & Use of a Goal Oriented Course Evaluation Instrument 28.14
The Development of a Language Behavior Inventory for Use with Severely Retarded Children 19.24
The Development of a Mathematics Self-Concept Test 19.24
The Development of a Measure to Evaluate the Communication Skills of Young Children 19.24
Development of a Piagetian-Based Written Test: A Criterion-Referenced Approach 14.02
Development of a Problem Solving Inventory Involving Three-Dimensional Models of Problem Situations 26.13
Development of a Signalling Evaluator of Drug-Abuser Rehabilitation Success 3.07
Development of a Simple Readability Index for Job Reading Material 20.14
The Development of Alternative Models 28.17
The Development of An Instructional Delivery System for External Studies in Higher Education 8.16
The Development of Concepts of Nationality and Spatial Relationships in Elementary School Age Children 3.04
Development of Provisional Criteria for the Study of Scientific Creativity 10.20
Development of Situational Task Methodology for the Evaluation of Process Outcomes in the Open Classroom 33.10
The Development, Use, and Importance of Instruments that Validly and Reliably Assess the Degree to Which Experimental Programs are Implemented 19.21
Developmental and Social Influences from Birth on School Readiness in a Metropolitan Cohort 35.09
Developmental Aspects of Pattern Prediction Performances under Inductive versus Inductive-Deductive Conditions 8.07
A Developmental Study of Group Formation [illegible]ildren 26.08
A Developmental Study of the Criteria Use[illegible]by Children to Justify Their Affective Response to Arts Experiences 28.12
Diagnosis and Remediation of Instructional Problems Without the Use of Standardized Instruments 28.14
A Dialect Differentiation Measure for Nonstandard Black English 24.03
Dialect in Relation to Reading Achievement 10.09
Differences in Perceived Sources of Academic Difficulties: Black Students in Predominantly Black and Predominantly White Colleges 36.16
The Differential Measurement of Visual Reading Difficulty 15.25
Differential Perceptions of Occupations with Increasing Age 6.16
Differential Relationships with Grade Criteria for Predictors at Varying Levels of Freshman Grade Complexity 4.14
The Differentiated Child Behavior Observational System 26.08
Differentiated Staffing in Non-Teamed Organizational Structures as They Affect Elementary School Teacher-Pupil Interaction 15.10
Dimensions of Reading Behavior Among Competent Fifth Graders 27.09
Discovering Quantitative Precocity 10.08
The Discriminative Cue Value of Adult Made Expectancy Statements 13.15
A Discussion of the Theoretical Contradictions Found in Modeling Research and Social Learning Theory When Interpreted Within Phenomenological and Social Comparison Theories 35.21
Distraction, Response Mode, Anxiety and Achievement from CAI 28.05
Do Error-Free Materials Maximize Learning? 6.06
Doing History: Some Notes Toward a Pedagogy 14.07
Dropout Prediction at an Urban Community College following Open Admissions 6.13

The Dynamics of Instruction Systems: Feedback Control in Individually Paced Instruction 15.10
Early Identification of Children with High Risk of Reading Failure 6.08
Economically-Disadvantaged Parents Use Learning Games to Increase Reading Achievement of Their Children 19.19
The Educable Mentally Retarded Child: Current Issues and Teacher Attitudes 20.23
Educational Facilitation for Mathematically and Scientifically Precocious Youth 10.08
Educational Research and the Quality of Health Care: A Symbiotic Relationship 26.14
The Effectiveness of Five Selection Policy Variables in Predicting Academic Achievement in a Nursing School 25.08
Effectiveness of 4-C Manpower Training Program for Entry Participants 14.10
The Effectiveness of Six Personality Variables in Predicting Success on the Nursing State Board Examination 36.20
The Effectiveness of Textbook, Individualized, and Pictorial Instructional Formats for Hearing Imparied College Students 15.24
The Effects of Adding Emphasis of Relevant Attributes and a Concept Definition to a Rational Set of Concept Examples on Non-Examples 37.05
Effects of Age, Form Class and Word Frequency on Word Associations 34.17
Effects of the Amount of Information, Organization of Information, and Study Time on the Processing of Quantitative Information Presented in Graphical Form 33.08
The Effects of the Analytic-Global and Reflection-Impulsivity Cognitive Styles on the Acquisition of Selected Geometry Concepts 6.11
The Effect of Auditory Dimensional Preference on the Auditory Discrimination Performance of Children 6.04
The Effects of the Availability of Objectives and/or Rules in a Learner-Controlled Computer-Based Task 37.05
The Effects of the Availability of Prior Examples and Problems on the Learning of Rules in a Computer-Based Task 28.05
The Effect of Children's Expectations and Word Association Upon the Comprehension of Passive Sentences 4.07
Effects of Children's Expectations on Mastery of the Minimum Distance Principle 4.07
Effects of Classification Exposure upon Numerical Achievement of Educable Mentally Retarded Children 20.23
The Effects of Cluster Sampling 19.23
The Effect of College Proximity Upon Rates of College Attendance 25.09
The Effects of Computer Programming on Performance in Mathematics 19.06
Effect of Computer Tutorial Review Lessons on Exam Performance in Introductory College Physics 28.05
The Effects of Conditioning Expectancy Statements to Success and Failure Outcomes 13.15
The Effects of Culture and Education on the Acquisition of Formal Operational Thinking 4.08
Effect of Differentially Motivating Instructions on the Predictive Validity of a Test Device 25.14
The Effects of Diverse Test Score Distribution Characteristics on the Estimation of the Ability Parameter of the Rasch Measurement Model 27.16
The Effects of Dual Information Processing of Standard and Nonstandard English in Nonstandard Speakers 35.20
The Effect of the Elementary School Principal's Rule Administration Behavior on Staff Militancy and Leadership Perception 35.07
The Effects of Empirical Program Revision and Presentation of Objectives on Student Performance 19.07
The Effect of a Field-Based Teacher Education Program Upon Pupil Learning 8.16
The Effect of Field Participation and Humanistic Classroom Experiences upon the Perceptions of Prospective Teachers . 25.07
Effects of Frame Order and Practice Distribution in a Programmed Text 19.19
The Effect of Humanistic Training in Helping Relationships for Cooperating Secondary School Teachers upon Selected Perceptions of the Teachers and Their Student Teachers ... 25.07
The Effect of a Humanistic Training Model on the Perceptions of Elementary Teachers-in-Training 25.07
The Effect of Immediate Environment on Children's Tendency to Reflect while Solving Problems 14.11
The Effect of Individual Goal-Setting Conferences on Achievement, Attitude, and Locus of Control 26.06
The Effects of Induced *E* Bias on the Reading of Instructions During Behavioral Experiment 27.16
The Effect of Instructional Methods on Learning 26.06
Effect of Instructional Pace on Student Attentiveness 13.19
Effects of Learner Control on Performance and State Anxiety in a Computerized Concept Learning Task 29.06
Effects of Meaningful Learning and Rote Learning Questions on Recall of Prose Material 36.13
Effect of Micro-teaching on Self-concept of Teachers and Supervisors 34.14
The Effects of Modeling on the Development of Sex-role Behaviors in Children 17.06
The Effect of Motion Pictures Portraying Black Models on the Self-Concept of Black Elementary School Children 19.05
The Effects of Multi-Age Multi-Grade Programming on Students' Verbal and Non-verbal Creative Functioning 8.08
The Effect of Non-Normality in Torgerson's Multidimensional Scaling Model 20.11
The Effects of an Open Experimental Program on the Attitudes and Self-Concepts of Graduate Students 17.20
The Effect of Perceptual Focus and Planar Orientation Sequence on Length Conservation Responses 4.17
Effect of Pictures on Acquisition of a Sight Vocabulary in Rural EMR Students 28.05
Effects of Preparation on Vagueness in Self-Prompted Lecturing 13.19
The Effect of Preservice Creativity Training in a Humanistic Program on Creative Abilities and Perceptions of Prospective Teachers and Their Pupils 25.07
The Effects of Prose Organization and Individual Differences on Free Recall 10.07
Effects of Prose Organization and Phrasing of Sentences and Learning Objectives upon the Retention and Integration of Categorical Information 34.17
The Effects of Question Position and Relevancy of Questions to Criterion Test on Learning Social Science Material by Fifth Grade Pupils 29.12
The Effect of Relevant Teaching Practice on the Elicitation of Student Achievement 10.06
The Effects of School Achievement on the Affective Traits of the Learner 28.12
The Effects of Selected Experiences on the Ability of Kindergarten Children to use Conservation and the Transitive Property of Six Relations 4.08
The Effect of Selected Poor Item-Writing Practices on Test Difficulty, Reliability and Validity: A Replication 26.16
The Effect of Set on Preferred Representational Mode 6.06
The Effect of Social and Cognitive Interaction Strategies on Children's Motivation to Achieve in School 26.09
The Effects of Social Position, Race, and Sex on Work Values of Ninth Grade Students 35.04

The Effects of a Student Centered Special Curriculum upon the Racial Attitudes of Sixth Graders 19.05
Effects of the Styles of Leadership on Participants Perception of Basic Organizational Hierarchical Needs in a Simulated Decision Making Setting 32.01
The Effect of Subjective Organization on the Recall of Prose .. 10.07
Effects of Teachers' Cognitive Demand Styles on Pupil Learning 10.06
The Effect of Technology on Organizational Task Structure ... 25.16
Effects of Temporal Factors on Ability Attribution in a Tutoring Situation 33.08
The Effects of Three Spelling Programs on the Spelling Achievement of Sixth Graders from Two Culturally Different Areas 36.16
The Effects of Three Types of Repetition and the Amount of Chunked Information on the Acquisition and Retention of Structured Information 6.06
The Effect of Training in Structured Tutoring on a Parent's Desire and Capability to Assist his Child in the Acquisition of Reading Skills 3.11
Effects of Training on Rating Reliability as Estimated by ANOVA Procedures, for Fluency Tests of Creativity 10.20
The Effect of Two Humanistic Models of Teacher Education Upon the Perceptions of Prospective Teachers 25.07
Effect of Two Word Deletion Schemes Upon the Comprehension of Five Levels of Telegraphic Prose 8.09
The Effects of Variance Heterogeneity on Selected Multiple Comparison Procedures 20.13
The Effect on One's Own Performance of Evaluating Peers 36.20
Either/And Not Either/Or 27.06
Elaborative Prompt Effects in Childrens' Noun-Pair Learning: A Two-State Analysis 20.24
Elementary Administrators Role Perceptions Related to Assessment of Community Powers 34.04
The Elementary School Environment: Perceptions of Students and Teachers 34.20
Elementary Social Studies Teachers' Differential Classroom Interaction with Children as a Function of Differential Expectations of Pupil Achievement 13.15
The Emergency of Vocational Expectations in Pre-School Children 19.25
An Empirical Comparison of the Accuracy of Selected Multivariate Classification Rules 17.07
An Empirical Comparison of Two Path Coefficient Estimates .. 25.17
An Empirical Comparison of Selected Two-Sample Hypothesis Testing Procedures Which Are Locally Most Powerful Under Certain Conditions 17.11
An Empirical Examination of Expected and Desired Involvement in Curriculum Planning 19.09
Empirical Option Weighting with a Correction-for-Guessing ... 27.16
The End of The Drunkard's Search? A Report on a Radical Solution of the Problem of Evaluation of Instruction 35.21
The Equality of Educational Opportunity within Ethnically Mixed Classrooms 34.07
Equivalent Validity of a Completely Computerized MMPI 26.17
Establishing and Maintaining the Instructional Support of Inner-City Parents 15.02
Estimating Latent Ability Under the Logistic Model for Ordered Categories: An Investigation of Bias and Information Gain . 14.13
Estimating Total-Test Score Distributions Through Item Sampling: A New Theoretical Approach 17.11
Estimation of Intervention Effects in Seasonal Time-Series 17.07
Ethnicity and Equality of Educational Opportunity 7.01
Ethnicity: Science, Being and Educational Opportunity 7.01
Evaluating a Campus Drug Education Program 19.12
Evaluating the Open Classroom 33.10
Evaluation of a College Credit Course Designed to Facilitate Decision Making for Career Development 15.08
An Evaluation of the Comprehensive Early Childhood Education Network 3.10
Evaluation of an Experimental Preschool for American Indian Children 19.12
Evaluation of an Inter-University Program in Medical Education 19.04
Evaluation of Non-Traditional Instruction in a Southeastern Alaska Indian School 3.10
An Evaluation of Sampling Designs for School Testing Programs 19.23
Evaluation of the "Eager to Learn" Teacher Inservice Teleseries 36.14
An Evaluation Strategy for Instructional Product Development 15.05
An Evaluative Study of the ROCK English as a Second Language Program in Spanish-English Bilingual Projects ... 3.10
Evolution in Patterns of Territoriality and Leadership in Philadelphia Gangs 26.20
Examination of Participation and Order Effects in Feedback Interviews 34.14
An Example of the Application of the Assessment and Diagnostic Procedures of a Comprehensive Accountability Plan 15.05
Expectancy and Race: Their Influences Upon the Scoring of Individual Intelligence Tests 20.12
Expectancy Statements in the Classroom 13.15
Expectations in Mixed Racial Groups of Children 24.03
Experimental Aesthetics: Some Simple Manipulations of Music 28.12
An Experimental Curriculum Designed to Modify Children's Sex Role Perceptions and Aspiration Levels 28.12
An Experimental Evaluation of New Measures of Cognitive and Non-Cognitive Performance for Elementary School Children 25.14
An Experimental Inquiry into the Relationship of Cognitive Complexity and a Teacher Education Core Course 4.17
Experimental Research in Reading: Some Considerations in Regard to Design 10.09
An Experimental Study of the Effects of Teacher Participation in a Curriculum Engineering Task on a Dimension of Curriculum Implementation 33.03
An Experimental Study of Relationships Between Mastery of a Super-ordinate Mathematical Task and Prior Experience with a Special Case 19.06
Experimenter-Provided vs. Subject-Generated Learning Strategies: Which is Better? 20.24
Exploration and Learning-to-Learn in Disadvantaged Preschoolers 28.26
Facilitation of Cooperative Behavior in Elementary School Children 36.10
Factor Analysis of an Instructor Rating Scale 17.10
A Factor Analytic Investigation of the Task of Public Education 28.16
Factorial Structure, Reliability, Validity, Effectiveness and Efficiency of the Canadian Cognitive Abilities Test Re-Examined 20.12
Factors Affecting Student Acceptance or Rejection of a Foreign-Language Learning Program 26.09
Factors of Predicted Learning Disorders and Their Interaction with Attentional and Perceptual Training Procedures 6.08
Family Socialization and Educational Achievement in Two Cultures: Mexican-American and Anglo-American 34.07
The Federal Policy Process and Educational Reform 37.06
Feedback in Instruction: A Review and Suggestions for Further Research 25.11
Feelings, Confrontations and Double Messages: A Re-examination of the Effects of Organization Development Interventions on the Verbal Discussion Processes of a Decision-Making Team in a School System 17.08

Film vs. Lecture Methods of Instruction as Related to Imageability ... 36.14
The Financial Condition of Non-Public Schools: Implications ... 26.15
Five Year Stability of Holland Occupational Types ... 15.11
Fixed Interval Reinforcement and Continuous Daily Feedback on Academic Performance--a Conjunctive Confounding of Schedules ... 33.08
Fluency and Originality as a Function of Group Size in Problem Solving ... 14.11
Follow Through Evaluation in Philadelphia. I. The Moderate Realist Philosophical Position as the Base for Educational Evaluation ... 15.02
Formation of Teachers' Expectations of Students' Academic Performance ... 13.15
A Formative Evaluation of Individualized Science, An Innovative Instructional System ... 14.04
A Formative-Summative Evaluation Design for a State-Sponsored Program of Educational Experimentation ... 4.19
Four Indices for Investigating Inter-Observer Accuracy of Observational Instruments ... 26.16
Frequency of Teacher Reinforcement Given to Lower and Middle Class Students ... 29.15
From Emerson to Dewey ... 3.03
Further Studies of Linear Prediction Following Matrix Sampling ... 10.16
A Generalizability Theory Approach to Criterion-Referenced Tests ... 14.02
Generalized Correction for Attenuation ... 20.11
The Harmonic Mean and Kramer Unequal n Forms of the Tukey Statistic ... 17.07
High-Inference Behavioral Ratings as Correlates of Teaching Effectiveness ... 15.19
How Can Pre-Service Education Programs Involving Career Related Field Experiences Be Evaluated? ... 26.07
How Many Es Are There? A Critical Analysis of Problems Concerning Determination of Evaluative Factors of Semantic Differential Scales ... 17.11
How Teachers View the Effective Teacher ... 15.19
A Humanistic Model for Teacher Education ... 25.07
Hypothetical Concepts, Intervening Variables, and Observed Data in Program Development and Evaluation ... 4.19
Identification of an Educational Production Function by Experimental Means ... 17.05
Identifying and Classifying Competencies for Performance-Based Teacher Training ... 8.16
The Impact of Social Skill Training on the Perceptions of Elementary School Children ... 15.03
Implications of the RAII System for Educational Researchers, Developers and Practioners ... 3.11
Improving Mental Skills Through Filmic Modeling ... 36.14
Incentives for School Achievement ... 25.11
Incidental Learning of Categorical Text Items Induced by Specific and General Search Directions ... 6.07
The Incorrect Measurement of Components ... 27.18
Increasing Student Achievement by Teacher Incentive ... 10.06
An Index of Parallel Forms of Criterion-Referenced Tests as a Function of the Distribution of Test Scores ... 14.02
An Index of Predictive Efficiency ... 17.07
Indices of Complexity and Interpretation: Their Computation and Uses in Factor Analysis ... 27.18
Indirect Review Effects Produced by Adjunct Questions ... 6.07
Individual Differences in the Effects of Adjunct Questions on Learning from Prose Material ... 36.13
Individualized Instruction and State Assessment: The New Jersey Educational Assessment Program ... 17.12
Individualizing Instruction: Do Aides Make a Difference? ... 14.04
Inequality Aversion and Optimization of Student Achievement Under Computer-Assisted Instruction Used as Compensatory Education ... 29.06
An Inexpensive Method for Providing Immediate Feedback to Teacher-in-Training ... 32.07
The Influence of Choice on the Acquisition and Retention of Learning Materials in Different Modes of Instruction ... 27.10
The Influence of Differential Feedback on Achievement of Old and New Material ... 25.08
The Influence of Instructional Factors on Various Learning Situations ... 33.08
Influence of Interests on Sex Differences in Reading Comprehension ... 8.09
The Influence of Interpersonal Skill Training on the Social Climate of Elementary School Classrooms ... 36.10
The Influence of Prior Information Concerning Course Aptitude on Verbal Participation ... 8.07
The Influence of Sex of Student and Sex of Teacher on Students' Achievement and Evaluation of the Teacher ... 10.06
The Influence of Vocational Information on the Career Development of Elementary School Children ... 19.25
In-Service Training for Elementary Teachers: Increasing Student Achievement Through a Joint University-School District Project ... 6.17
An Instructional Model for Using Simulations and Games in the Classroom ... 19.19
Instructional Objectives as Directions to Learners: Effect of Passage Length and Amount of Objective-Relevant Content ... 6.07
Instructional Planning for the Development of Cognitive Behaviors ... 36.07
Instructional Research within the First Year Communication Skills Program ... 35.03
The Instrumentation and Data Collection Plan for the North Carolina Statewide Assessment ... 4.20
Integrational Deficits in Perceptual-Visual-Motor Learning Disabilities: A Diagnostic Procedure ... 19.24
Interaction Analysis and Self Concepts of Student Teachers ... 32.07
Interaction Between Reward Preference and Task Difficulty in a Computer Assisted Instruction Setting ... 25.11
The Interaction of Divergence and Convergence of Students and Teachers with Personality and Instructional Variables Affecting Educational Outcomes ... 26.09
The Interaction Patterns and Normative Structure of a Violent Juvenile Gang and Its Relationship to School Achievement and Attendance in an Inner City ... 26.20
Interactive Effects of Motivation and Rates of Feedback in Concept Learning ... 25.11
An Interactive Network for the Introduction of Innovation in Education: Organization, Operation, and Impact ... 14.10
The Interdependence of Creative Attitude and Creative Ability 8.08
Interest and Evaluative Meaning as Factors in the Acquisition of a Sight Vocabulary ... 4.07
The Internal Construct Validity of the Ross Educational Philosophical Inventory (REPI) ... 26.17
Interval Estimation of Correlation Coefficients from Explicitly Selected Samples ... 15.07
An Investigation into Student Teacher Problems During Practice Teaching ... 32.07
An Investigation of Department Heads at a State University ... 28.18
An Investigation of the Development of Selected Topological Properties in the Representational Space of Young Children 4.08
An Investigation of the Dimensions of the Elementary School Environment Through Factor Analysis of Beta Press ... 34.20
An Investigation of Domain Specific Aspects of Locus of Control ... 29.22
An Investigation of the Elements of Sexism in Public Schools ... 17.06

An Investigation of the Influence of Student Behavior on Teacher Behavior ... 13.19
An Investigation of Relationships Among Instructional Mode, Teacher Needs, and Students' Personalities ... 13.19
Investigating Aptitude-Treatment Interactions ... 15.24
Is Nursing a Viable Career for Blacks? (A Study of Black and White Freshman Nursing Students) ... 24.03
Is Organization of Prose Material Related to Amount of Recall? 10.07
Item-Examinee Sampling: Optimum Number of Items and Examinees ... 10.16
Item-Sampling as a Classroom Evaluation Technique ... 19.23
Item Selection for Criterion-Referenced Tests ... 14.02
Laboratory Team Leaders in a General Psychology Class ... 20.21
Language and Aggression: An Exploratory Study Amongst Black and Puerto Rican Disadvantaged Youth ... 36.17
Learning Abilities of the Prekindergarten Child ... 35.09
Learning and Recall of Adjective Noun Phrases Within Prose ... 10.07
The Learning Booth—Product Evaluation and Research ... 19.07
Linguistic Predictors of Properties of Set ... 6.06
Local-Cosmopolitanism and Collective Bargaining in a State College System ... 37.07
Longitudinal Kindergarten-First Grade Perceptual Study ... 28.26
A Longitudinal Study of Fiscal Equalization in Illinois ... 17.05
Long-Range Prediction of Achievement with Prior Measures of Learning, Social Behavior, Sex and Intelligence ... 4.14
Loss of Retrieval Information in Prose Recall ... 10.07
Low-Inference Observational Coding Measures and Teacher Effectiveness ... 15.19
Making Decisions on the Passage Dependency of Reading Comprehension Items—Some Useful Statistics ... 10.09
A Management Model for Team Development of Self-Instructional Higher Education Curricula on the Structured Curriculum Model ... 15.05
Management of Organizational Conflict Resulting From Adoption of New Planning-Evaluation Strategies ... 19.10
Management Styles and Leadership Behavior Within a Residence Life Program ... 25.19
Markov Chain Analysis of Classroom Interaction Data ... 15.09
Mathematical Learning and the Sexes: A Review ... 19.06
Mathematics of Life Insurance Study Aid Development and Evaluation in a Nontraditional Setting ... 19.07
The Matrix Test Analysis Program: A Measurement Heuristic ... 10.16
Measured Perceptual Modality Strengths as Descriptors for Establishing Instructional Objectives with Educable Mentally Retarded Children ... 35.22
The Measurement of Classroom Environmental Press ... 3.07
Measurement of Decision-Making Performance in a Simulated Situation in Relation to Critical Thinking, Machiavellianism, and Motivation with Respect to the Amount of Situational Information ... 32.01
Measuring Reflection Impulsivity Accurately ... 3.07
Measuring Teacher Effects on Pupil Achievement ... 15.19
Measuring Work Values of Elementary School Children ... 29.11
Meta-Evaluation Applied: The Evaluation of a Large Scale Evaluation System ... 8.18
Metalinguistic Ability and Cognitive Performance in Children From Five to Seven ... 4.08
A Method for Generating and Evaluating Course Goals ... 28.14
Methodology Development for Advocate Team Use for Input Evaluation ... 14.14
Methodology for Group Comparisons Derived from Objectives-Based Instructional Programs ... 17.12
Mexican American Self-Concept and Educational Achievement: The Effects of Ethnic Isolation and Socio-Economic Deprivation ... 34.07
Microteaching: An Examination of the Model and its Variation 35.18
Microteaching: A Study of Effects of Specific and General Verbal Behavior of Supervisors ... 34.14
A Model for Constructive Influence Upon Gang Behavior ... 26.20
Model for the Evaluation of an Innovative Program for Assessing and Instructing Four-and-Five-Year-Old Children ... 27.06
A Model for Graduate Education ... 8.22
A Model for Psychometrically Distinguishing Aptitude from Ability ... 19.24
A Model of Curriculum Evaluation Applied to a University Baccalaureate Program ... 19.04
Models of Reading and Reading Disability ... 6.08
Multidimensional Scaling of Classroom Interaction Data ... 20.11
A Multi-Media System for K-6 Career Education Programs ... 6.18
A Multitrait-Multimethod Approach to the Construct Validation of Self Acceptance ... 15.03
A Multivariate Analysis of Rationally Derived Categories of Learning Disorder ... 27.16
Multivariate Analysis of the Relationship between IQ and Creativity ... 10.20
Multivariate Analysis of Repeated Measures with a Design on the Measures and on the Subjects—An Example ... 25.17
A Multivariate Approach to the Validation of a Behavioral Checklist ... 27.18
Multivariate Prediction of Early School Achievement ... 25.08
The Museum ... 7.02
Myths of Information Needs ... 8.18
Negative Instances and the Acquisition of the Mathematical Concepts of Distributivity and Homomorphism ... 19.06
Non-Verbal Communication of Retarded Pupils ... 20.23
A Note on Allocating Items to Subtests in Multiple Matrix Sampling ... 10.16
Notes on the Distinction Between Excitement and Education ... 35.21
Objectives, Sequence, and Aptitude Treatment Interactions in CAI ... 29.06
Observation as a Tool for Evaluation of Implementation ... 26.08
An Observational Instrument Based on the Objectives of a Special Education Curriculum ... 3.08
Observer Effect on Teacher Use of Token Reinforcement ... 29.15
On the Assessment of Psychometric Adequacy in Correlation Matrices ... 20.11
On Branching and Paths in CAI Lessons ... 29.06
The Open Curriculum and Selection of Qualified Staff: Instrument Validation ... 17.20
Open Education and Curiosity: Empirical Testing of a Basic Assumption ... 33.10
Open Education: A Valuable Pre-School Model? ... 17.20
An Open University for the Midlands: Why and For Whom? ... 6.17
Operational Accountability ... 3.10
Optimum Sample Size and Number of Levels in the Random-Effects Analysis of Variance ... 20.13
Order and Scheduling Effects on Reinforcing On-Task Behavior in the Classroom ... 25.11
An Ordering Theoretic Analysis of a Propositional Logic Game 14.13
Organization and Function in Large City Research Bureaus ... 15.02
Organizational Feedback as a Factor of Educational Change: An Application of Open Systems Theory ... 27.01
Organizational Survival: A Comparative Case Study of Seven American "Free Schools" ... 26.15
Output Processes in the Learning of Verbal Materials ... 34.17
PIC: A Process Model for Individualization of Curricula ... 14.04
The Paired Associate Task and Levels of Learning ... 20.24
Parental Evaluations and Reported Behavioral Sanctions as Predictors of Student Self-Conceptions of Ability ... 36.18
Parents' Ability to Attend to Children: Predictors of Intelligence 36.18
The Parent-School Communications Questionnaire: A Measure of School Boundary Permeability ... 20.07

Participation in Student Activities as a Variable in the Educational Attainment and Expectation Process 37.04
Participative Decision Making and Perceptions of Organization: Refinement and Test of a Decision Deviation Index 17.08
Patterned Teaching Behavior: A Study of Dyadic Intra-communication 36.10
Pedagogical Frames and Teaching Process: A Report from an Empirical Curriculum Project 27.09
Perceived Supervisory Style and Teaching Confidence 2.02
Perception of Racial Cues in Preschool Children: A New Look . 19.05
Personal Characteristics Associated with Effective Teaching ... 15.19
Personal and Institutional Characteristics Affecting Teacher Mobility 25.10
Personality Characteristics and Assumptions Held by Open and Traditional Teachers of the Poor 17.20
Personality Characteristics and Performance on Computer-Assisted Instruction and Programmed Text 28.05
Personality Correlates of the Research-Service Dimension 35.17
Personality, Value Structure, and Preference for Field Activities Among Pre-Service Teachers 26.07
Phonological and Sematic Components of Words in Beginning Reading 10.09
Pictorial and Verbalization Factors in the Paired-Associate Learning of Unfamiliar Stimulus Terms 20.24
Planning-Evaluation in a Medium Size School District 19.10
Playing the Role of the Principal: A Second Look at Patterns of Administrative Response 32.01
Pluralism and Equality of Educational Opportunity: A Black Perspective 7.01
The Politics of Alternative Models to the Public School System 26.15
Post Graduate Career Plans of College Seniors 4.17
Predicting Mobility Using Personal and Geographic Characteristics and Its Use in the Needs Assessment for Vocational Programs 6.18
The Prediction of Achievement Means of Schools From Non-School Factors Through Criterion Scaling 3.11
Prediction and Comparison of Teacher and Administrator Attitudes Towards Collective Negotiation Issues 37.07
Prediction of Minimum Pass Level (MPL) from Field Test Results 4.14
Prediction of Procrastination in a Self-Pacing Instructional System 20.14
Predictors of Supervisor-Teacher Converence Interaction 34.14
Prejudicial Attitudes of Danish Students: Some Educational Implications 25.09
The Press Relations of a Local School District: An Analysis of the Emergence of School Issues 20.07
Principals, Teachers, and Elementary Youth: A Study of the Relationships between Selected Variables of Teacher-Principal Social Interaction and Six Features of the Educational Environment 34.20
A Problem in the Aggregation of Student Data to the Level of School 17.12
Problems in the Evaluation of Affective Education: A Case Study 19.18
Problem Solving Ability of Disadvantaged Children Under Four Test Modes 26.13
A Procedure for Recording Sequential Patterns of Social Interaction in the Classroom 29.15
The Process of Educational Change at the School Level 27.01
The Profile of a School and Measurement of a Multi-District Organizational Change Program 25.16
Program Evaluation as an Administrative Concept 28.16
Project PRIME (Programmed Reentry into Mainstream Education) 28.13
The Promotion, Dissemination, and Utilization Plan for the North Carolina Statewide Assessment of Educational Progress 4.20
Propensity to Change Responses in a Delphi Round as a Function of Dogmatism 35.04
Psychometric Characteristics of Performance Tests of Teaching Effectiveness 17.22
Psycho-social and Moral Elements in Curriculum Theory 35.04
Public School Teachers' Work Motivation, Organizational Incentives, Job Satisfaction, and Primary Life Interests 35.17
Purposes, Processes and Consequences of Three Spaced 1-Unit Seminars on the Nature and Meaning of Values 29.11
The Qualitative Logistic Response Curve and Its Application to Developmental Data 15.07
A Quick Screening Test to Predict Future Academic Failure in Kindergarten Children 25.14
Rapid Reading as a Function of Redundancy Reduction: Theory and Research 8.09
Readability and its Effects on Reading Rate, Judgments of Comprehensibility and Comprehension 15.25
A Reappraisal of the Halpin-Croft Model of Organizational Climate 35.07
Recall Instructions and Learning from Text with Adjunct Questions 36.13
Recent Trends in Anti-Egalitarian Social Research: A Consideration of Possible Deterrent Effects on Equal Educational Opportunity for Minorities 7.01
A Reformulation of the Teacher Survival Process 27.17
Reinforcement Conditions and Personality Characteristics: Aesthetic Judgment 28.12
Relation of Level I – Level II Abilities to Socioeconomic Status 36.16
The Relation of Student Achievement and Student Ratings of Teachers 10.06
The Relation of Teacher Performance in Microteaching to Subsequent Student Achievement and Rating of the Teacher under Classroom Conditions 35.18
Relationships Among Piagetian Achievement, and Intelligence Assessments 3.04
The Relationships Among Pupil Control Ideology, Observed Behavior, and and Discipline Referrals of Public Secondary School Teachers 2.02
Relationships between Anxiety and Curiosity Processes in Complex Learning Situations: A Replication Study 26.09
Relationships Between Measures of Creativity and Pupil Control Ideology 2.02
The Relationships Between Reading Medium and Prose Writing 6.04
The Relationship Between Stimulus and Response Prompts under Two Types of Programmed Presentations 19.19
The Relationship of Achievement and Attitudes Towards Mathematics in the Elementary School: A Longitudinal Study 26.09
The Relationship of Aptitude Test School Means and School Socioeconomic Characteristics to Achievement Test School Means 25.14
Relationships of Economic, Social and Educational Attitudes to the Outcome of a School Bond Issue: An Investigation of Voter Values and Voting Action 25.10
The Relationship of Evaluations of Students' Cognitive Performance to their Self-Concept Assessments and Mental Health Status 36.19
The Relationship of Logical Abilities in Children to Concept-Learning: Concept-Shift Performance in Terms of Piaget's Logical Operations 3.04
Relationship of Major to Professional Work-Orientations Among Graduate Students in Educational Psychology 15.11

The Relationship of Race and Level of Understanding Between Counselor and Client in the Initial Interview 15.13
Repeated Testing During Acquisition of College Course Material 36.20
A Report on the Study of the Professorship in Educational Administration 36.05
Research Design in the Arts: Suggested Approaches and an Illustration 26.14
Research in a Nontraditional Setting: Development and Evaluation of an Audio-Self Instructional System 19.07
Research in Retrospect: Implications for the Future 26.14
Response Latency as a Correlate of Individual Differences in Retention 29.06
Retention and Item Comprehension in Prose as a Function of Question Placement and Pacing 36.13
Retroactive Interference and the Meaningful Learning of Textual Material 6.07
Reversing Irreversible Sentences: Semantic Constraints Upon Syntactic Comprehension 4.07
A Review of Major Development and Implementation Activities 8.22
A Review of Several Testing Models for Individualized Instruction Programs 19.21
The Revival of "Local Control" in Suburbia: Some Unanticipated Consequences of Increased Participation 20.07
Role Conflict, Role Ambiguity and Motivation to Work of Professional Negotiators in Education 37.07
The Role Expectations of the Black Principal as Perceived By Himself, Other Black Administrators, Influentials, and Their Community 34.04
The Role of Labor Unions in the Politics of School Decentralization in New York City and Detroit 25.10
Role Stress Among Indian Dormitory Aides 28.09
Sampling and Analysis for the North Carolina Statewide Assessment of Educational Progress 4.20
Scalability of Tasks: A Methodological Study of Conservation on a Set of Equal Addition Tasks 3.04
A Scheme for Test Analysis Using FORTRAN 29.22
School Board Member Recruitment in Ontario: Structure and Process 27.17
School Related Alienation: Perceptions of Secondary School Students 37.04
School-Related Attitudes of Urban Junior High Students 29.11
Searching for Models of Community Influence in Schools: An Examination of Public and Private Schools 26.15
Self-Concept of the Disadvantaged Child and Its Modification Through Compensatory Nursery School Experience 19.18
Self-Concept Enhancement of Pre-School Children 15.03
Self-Concept Theory and Research: Implications for School Counselors 15.03
Self-Esteem of Black and White Fifth-Grade Pupils as a Function of Demographic Categorization 24.03
Self-Instructional Units on Evaluation and Research 8.18
A Self-Renewal Model for Educational Systems 4.19
The Semantic Structure of a Set of Scales Developed for Use with Large City Pupils—A Followup Study 19.21
Setting Structure, Involvement, and Developmental Status as Learner: Elements of the Problem of the Match 27.10
Sex Differences on Factor Dimensions Related to Withdrawing from College 6.13
Sex, Politics and Personality: A Multi-dimensional Study of College Students 17.06
Significant Relationships Between Types of Trustee Boards and Their Decision Patterns in Four-Year Colleges and Universities 28.18
Similarities and Differences Between Three and Four Year Medical Graduates 20.21
Social Exchange in the Elementary School Classroom: The Problem of Teacher Legitimation of Social Power 36.10
Social and Personality Factors Influencing Learning from Television 37.04
Sociology and Open Education: An Experimental Project 36.19
A Sociometric Analysis of Friendship, Leadership, Workship Patterns in a Desegregated/Integrated Elementary Urban School 6.18
Some Factors Associated with Elementary-school Pupils' Performance on Examples Involving Selected Variations of the Distributive Idea 19.06
Some Implications of the National Assessment Model and Data for Local Education 8.17
Some Structural Relationships Within the Revised SVIB for Women 8.15
The Span of the Effective Stimulus during Fixations in Reading 8.09
Specificity of Instruction, Locus of Control, and Test Uncertainty in Achievement 36.20
Stability of Semantic Factor Structure and Change in Connotative Meaning of Educational Concepts During Teacher Training 19.21
Stability of Various Item Discrimination Indices 27.16
Stability of Verbal and Nonverbal IQ Scores for Spanish-Surname Students in Grades 1-11 ..... 20.12
Stages in the Design and Formulation of a Composition Program 19.09
The Stanford Group Process Training Curriculum: Research, Development and Evaluation 35.17
Starting Point for Curricular Change: A Predisposition and Suitability Measure for Client Groups 19.18
State Education Agency Planning: Impact of Federally Funded Programs 37.06
State Governmental Structure and Education Policy Decisions: A Statistical Exploration 37.06
Status Variables Related to Team Teacher Satisfaction in the Open Area School 36.19
Stimulus Concreteness and Mode of Elaboration in Children's Learning 20.24
Strategies for Developing Reciprocity between Educational Researchers and School Personnel 8.07
Strategies for the Sequential and Consequential Arrangement of School-Appropriate Behaviors 35.22
Structuring a Fine Arts Instructional Program 19.09
Student Attitudes Toward Sex-Typing Practices in High School 29.11
Student Behavior Underlying Faculty Judgments of Academic Performance 20.21
Student Characteristics Associated with Success in a Mastery Learning Strategy 20.21
Student Evaluation of Instruction: The Analysis of Discrepancies Between Perceived and Ideal Conditions 17.10
Student Learning Activities Under an Individualized Instructional Model 26.08
Student Membership Relations in the Classroom Group 26.14
Student Reactions to Community Colleges of Different Sizes .. 6.13
Student Teachers' Self Analysis of Teaching Behavior 15.09
Student Teaching Activity as an Additional Incentive for Learning 32.07
A Study of College Students' Preferences for Various Kinds of Information about Educational Innovation 29.11
A Study of the Effects of Curriculum Engineering Systems ... 27.06
Study of Kindergarten Pupil's Use of Logic in Problem Solving Through SAPA 14.11
Study of the Language Competency of Black, Inner-City High, Average and Low Readers in the Elementary Grades 35.20
A Study of the Relationship Between the Rankings of Supervising Teacher Effectiveness and Attitude Toward Education . 32.07

A Study of Selected Creative Thinking Tests in Conjunction with Measures of Intelligence ... 20.12
A Study of Text Processing and Intrinsic Individual Differences in Conceptual Organization ... 29.12
A Study of Validity of Self-Reported and Observed Academic Growth ... 26.17
Survey of Some Useful Applications of Sign Test in Educational Research ... 17.07
The Synergistic Evaluation Model ... 8.18
Syntactic Elaboration in the Speech of Lower-Class Black and Middle-Class White Preschool Children ... 36.17
System for Objectives-Based Evaluation—Reading (SOBE-R) Its Utility for Program Evaluation and Instructional Management ... 14.14
Teacher Behavior as a Measure of Teaching Effectiveness: Reinforcing and Questioning ... 15.09
Teacher Behavior Related to Pupil Creativity and Assessment Stratagem ... 10.20
Teacher Behavior and Student Achievement in the Bereiter-Englemann Follow-Through Program ... 28.26
Teacher Characteristics and Collective Bargaining Militancy ... 25.10
Teacher Corps: Institutional Change or Maintaining the Status Quo ... 28.09
Teacher Expectancy and Student Achievement: A Research Review ... 13.15
Teacher Perspective on Change to an Open Approach ... 33.10
Teacher Preparation and the Evaluation of the Conceptual Skills Kindergarten Program ... 35.03
Teacher Styles in Questioning and Explaining ... 29.15
Teacher Verbal Behavior and Classroom Social Structure ... 27.09
Teacher Verbal Behavior as a Component of Adventitous Learning ... 33.10
Teachers' Attributions of Responsibility for Student Success and Failure Following Informational Feedback: A Field Verification ... 10.06
Teaching English by Contrastive Analysis of Two Dialects ... 35.20
Teaching Mentally Retarded Children Word Recognition Skills Through Use of Hypothesis-Test Procedures ... 35.22
Teaching Performance Tests as Dependent Measures in Instructional Research ... 17.22
Teaching Styles of Israeli Four Year Olds and Their Mothers: Cross Cultural Comparison ... 35.09
Teaching Styles of Mothers of "Successful" Readers and "Problem" Readers in the First Grade ... 6.08
A Technique for Determining Reliable Clusters of Variables in Discriminant Analysis ... 25.17
A Technique for Studying Presentation Variables in Mathematics Text ... 14.13
Test-Wiseness Program Development and Evaluation ... 36.20
Theory and Phenomena in Curriculum Research: The Curriculum as a Social System ... 17.19
The Three Year B.A.—Who Will Choose It? Who Will Benefit? ... 10.08
The TIES Project-Building a Research Data Base ... 4.19
Toward Definition and Measurement of Pupil Control Behavior 28.16
Toward a Mankind Curriculum ... 28.02
Towards a Programmatic Production System for Educational Administration ... 28.17
Training Imagery Production in Young Children Through Motor Involvement ... 28.26
Training of Perceptual Motor Skills in Minimally Brain Damaged Children ... 15.24
Translating a Theoretical Curriculum Model into Instructional Decision Making ... 17.19
Two Dimensions of School Autonomy as Determinants of School Output Emphasis ... 27.01
Undergraduates' Expectations and Perceptions of a College Environment ... 25.09
Undertaking Program Comparisons in Educational Evaluation ... 17.12
Unequal Cell Frequencies in Analysis of Variance: A Review and Extension of Methodology for Multiple Missing Observation ... 20.13
Usage of Selected Language Structures by Different Ethnic and Social Class Groups ... 36.17
The Use of Course-Specific Questionnaires in Formative Evaluation ... 28.14
The Use of Linear Models in the Analysis of Categorical Data Collected in Educational Studies ... 15.07
The Use of Multiple Matrix Sampling and the Pearson Type I Curve to Approximate Norms Distributions of Standardized Achievement Tests ... 26.14
Use of Observational Data for Formative Evaluation of an Instructional Model ... 26.08
The Use o Reinforcement Procedures to Increase Completion of Homework Assignments ... 3.11
Use of Scaling Techniques in the Analysis of Mode of Responding of Kindergarten Children ... 3.08
Using Conceptual Frameworks to Improve Instruction ... 33.03
Using Group Performance to Interpret Individual Responses to Criterion-Referenced Tests ... 3.11
Validating a Goal Priority Instrument ... 14.14
Validation of a School Behavior Rating Scale ... 25.14
Venn Diagrams as Mediators of Rule Learning ... 37.05
Vicarious Influences on Children's Creative Behavior ... 8.08
Vicarious Transfer of Affirmative and Relational Concepts ... 37.05
A Video Tape Technique for Assessing School Performance ... 36.14
Violent Gang Membership and Nuclear and Companionship Family Structures ... 26.20
Visual Matching Skills in Prereaders ... 6.04
Vocational Interests and Manpower Utilization in Micronesia ... 3.07
Ways in Which Student Teams and Academic Games Alter Classroom Processes ... 19.19
What is a Normative Basis for Curriculum Research? ... 35.02
What Types of Field Based Learning Experiences Do Pre-Service Teachers Select? ... 26.07
What Valid Differences in Appropriate and Preferred Field Experiences for Pre-Service Teachers Can Be Inferred? ... 26.07
What you Always Felt you Should Know about PERT, But Were Afraid to Find Out ... 8.18
Who is the "Experienced" Teacher? ... 13.19
Women: Personal and Environmental Factors in Role Identification and Career Choice ... 8.15
Word Arousal Effects in Adolescent's Learning from Discourse 29.12
Young Black Radicals: Is Education Acting as a Stimulant to Black Revolutionary Thinking? ... 25.09
The Zoo ... 7.02

INDEX OF SYMPOSIA SESSION TITLES

Abstract-Concrete Dimension of Culture Fair Concept Formation and Problem Solving Assessment 15.12
Accountability: Problems and Possibilities 25.03
Adaption and Change in Long Term Program Evalution 6.10
Adaptive Models for Instruction 15.17
Administering Federal Educational Programs 15.04
Administrator Preparation–State of the Art: University Program Responsiveness to the 1970's 13.10
Alternative Explanations for Individual Differences in Social Behavior of Preschoolers 8.13
The Analysis of Educational Policy: A Progress Report 37.08
The Application of a Model for the Evaluation of Educational Products 15.06
Applications of the CSE Evaluation Model to a Variety of Educational Programs 19.12
Assessing Interpersonal Functioning in the Classroom: Towards A Technology of Preferred Teaching Behavior 6.01
Behavioral Effectiveness of Children in the Classroom: Concept, Application, and Implications for Regular and Head Start-Follow Through Classrooms 19.14
Big City Educational Governance: The Metropolitan Toronto Two-Tiered Experiment 29.23
Career Development Research: Implications and Direction 2.06
Clinical Judgment and Problem Solving 15.16
Closure on Openness in Education (AERA) 28.11
Collegiate Placement and Credit Policies: Issues and Experiences 35.05
Computer Based Instructional Design 25.04
Conceptual Bases for Video Playback in Teacher Education ... 8.21
Constraints and Pressures on Developmental Curriculum Innovation 26.02
Contrasts in the Process of Planned Change of the School's Instructional Organization 32.02
Cooperative Accountability Project for State and Local Educational Agencies 13.08
Cost Effectiveness Analysis in Education 17.02
Counselor Discriminative Stimuli: Empirical Investigation and Application to Counselor Training 2.08
Criterion-Referenced Evaluation Using Time-Series Designs and Item-Examinee Sampling 3.09
Critical Research Needs in Community Mental Health, Rehabilitation Counseling and College Counseling 20.01
Current Research on Basic Processes in Reading 4.02
Curriculum Evaluation: Perspectives from the Users and Doers of Evaluation 33.01
Data Collection Problems and Techniques in Research and Evaluation Studies 29.24
Decision Making in American Education 32.11
Defining Teaching Competency: Emerging Issues in the Developmental Period of an Assessment Approach to Competency-Based Teacher Education 4.03
Developing Effective Educational Organizations: Concepts, Realities, and Strategies for Change 32.06
The Development and Management of Pilot Project for a Reading Assessment System 8.12
Do Teachers Make A Difference? What Does the Research Say? 26.01
Educational Policy Study: An Avenue for Training School Administrators and Generating New Research 29.25
Educational Sociology: Tool for Action or Tool for Thought .. 28.07
Elites and Education in Western Europe 16.01
Employer-Based Career Education 35.16
Environmental Stress and Educational Response 13.07
The Ethnic Variable in Counseling: Three Experimental Studies 10.15
Evaluating Evaluation in Early Childhood Education Programs . 34.03
Evaluation of School Systems in Twenty Countries: A Presentation of the Findings from the IEA International Survey ... 6.09
Factors Relating to Correspondence and Other Non-Traditional Instruction 10.01
Film and Contemporary History 16.02
Four Provocative Research Reports from 1972 on Mathematics Education, K-12 ..... 17.14
Homosexuality: Out of the Educational Closet 13.06
Humanism and Accountability: Is Marriage Possible? 29.14
Identification of Selected Learner Characteristics and Their Implication for Personalization of Instruction 4.09
The Impact of Evaluation on Federal Decision Making 15.28
Improving Education Through the Use of Computers: Strategies for National Change 14.06
Interactive Psychological Research and Curriculum Development in Reading 36.08
Issues in Implementing a Competency-Based Program for Teacher Preparation 8.01
Maine Assessment of Educational Progress 26.18
Mathematics Concept Learning Among Prospective Elementary School Teachers 33.05
Maximizing Effectiveness of Human Resources in Individualized Instruction 8.02
The Measurement of Change in Personality Characteristics as Educational Outcomes 14.01
Models of Bias for Using Tests in Selection 10.17
Multi-Disciplinary Symposium on the Possible Effects on Year-Round Education on Community, School, Family, and Child 36.02
Multiple Publics, Priorities, Schools, and Universities: Some Advocate and Adversary Positions 24.02
The National Evaluation of Follow Through: A Two Year Report 20.26
The National Longitudinal Study of the High School Class of 1972 ..... 10.10
The National Test-Equating Study in Reading 27.12
New Developments in Mastery Learning and its Measurement .. 26.21
New Directions in Teaching Educational Psychology 3.01
New Models for Redirecting Evaluation Endeavors 2.04
Performance-Based Teacher Education: Issues and Strategies .. 24.06
Perspectives on Female Education 3.02
Perspectives on Learning from Discourse 37.09
A Plan for the Comprehensive Evaluation of College Teaching . 14.09
The Pleistocene Epoch of Experimental Research and Development Training Models 26.22
Policy Analysis as a Focus for Training Programs in Education Administration 32.04
Politics of Educational Innovation: Towards a Research Agenda 35.15
Problem Solving Measurement and Training Procedures 25.02
Protocol Materials in Teacher Education–a Product Dissemination Session 32.10
Psychological Processes in Creative Thinking and Problem Solving 28.04
Public Belief, Communication and Curriculum Change 19.03
The Pupil Personnel Service Staff and School Innovation 19.22
Recent Developments in Factor Analytic Methodology: New Insights on the Problems of Small Sample Generalizability, Longitudinal Data, Transformation, and Factor Scores 2.05
Recommendations and Sympathetic Suggestions for Future Product Development Efforts in Teacher Education 15.01
Repeated Testing: Interpreting the Results 19.20

Report of the Literature Search Subcommittee, NCRE (National Conference on Research in English), Phase I of a Study of Teacher Effectiveness in the Language Arts 15.18
Research-Based Models for Training Teachers of Handicapped Children 34.11
Research, Development, and Evaluation Leading to a System of Individually Guided Motivation 25.01
Research in Counseling: Future Directions 13.01
Research Methodology in Native American Educational Settings 33.09
Research on Political and Social-Psychological Variables Effecting the Administration of Organizational Change 20.10
Response in State Educational Finance Systems to Serrano vs. Priest: Connecticut, Massachusetts, Minnesota, and Virginia 35.08
Ritalin and the Schools 29.13
Satellite Academic Program 29.21
Schools without Failure: Case Studies of Four School Systems Which Have Experimented with the Glasser Approach 34.05
The Social Purposes of Education: Curriculum and Social Needs 34.02
Strategies for Curricular Planning: Toward Definition in the Curriculum Field 26.05
Strategies of Implementation of Innovations 4.12
Structural Variables that Account for the Difficulty Level of Word Problem Exercises in Mathematics 27.05
The Structure of Concept Attainment Abilities Project: Final Report and Critique 4.18
Survey Feedback in Educational Organization Development ... 15.27
The Systematic Design of Educational Research Training 13.09
Teaching Competency: Can it be Assessed? 19.01
The Testing of Black Students: I 4.21
The Testing of Black Students: II 15.26
Theories of Higher Education 36.01
Trends in Readability Research 27.02
The University and its Environment: An Environmental Information Delivery System 27.15
Urban Educational History 5.01
Uses of the Coping Analysis Schedule for Educational Settings (Cases) In Research and Teacher-Training 27.08
The White Researcher in the Black Community: A Dilemma .. 33.07
Working Model of a Competency-Based Teacher Education System 34.09

AUTHOR INDEX

Aaronson, May 17.16, 27.14
Abbott, Max 32.11
Abbott, Muriel M. 8.12
Adams, William R. 37.02
Adams, Sam 27.18
Adelman, Howard 6.08
Ahola, Allen A. 17.05
Airasian, Peter W. 3.08, 14.13
Albino, Judith E. 6.13
Alderfer, Clayton P. 15.27
Aleamoni, Lawrence M. 14.09, 35.05
Alexander, Larry J. 25.08
Alkin, Marvin C. 2.04, 15.28, 17.02, 19.12
Allen, D. Ian 26.04
Allen, Rosemary 19.09
Allen, Vernon L. 33.08
Allender, Jerome S. 3.01
Almen, R. 17.13
Almy, Millie 26.05
Alpren, Morton 8.16
Althouse, Ronald 35.11
Amarel, Marianne 23.10
Ambrosino, Robert J. 15.08, 36.15
Ames, Stephen P. 20.14
Ames, Carole A. 10.06
Ames, Russell E. 10.06
Ammentorp, William 15.10, 17.08
Ammon, Paul R. 36.17
Amos, Neil G. 14.10
Anderson, Ernest F. 13.04
Anderson, G. Ernest 29.22
Anderson, G. Lester 29.25
Anderson, James 34.07
Anderson, Lee 36.19
Anderson, Richard C. 4.01
Andrews, Richard L. 14.12
Andrews, Theodore 24.06
Andrulis, Richard S. 19.07, 27.18
Angoff, William 27.12
Appelbaum, Eugene 14.12
Apple, Michael 28.14
Appleberry, James 13.10
Archer, Philip D. 28.26
Archwamety, Teara 35.22
Armstrong, Charles M. 19.22
Armstrong, John H. 15.02
Arnekley, Bruce L. 20.14
Arnold, Daniel S. 26.07
Arnold, Richard 10.03
Ascher, Gordon 17.12
Ash, Michael J. 36.14
Ash, Philip 28.06
Ashburn, Arnold 3.10
Asher, Steven R. 8.09
Ashton, David M. 26.10
Aspy, David N. 6.01
Astin, Helen 34.10
Astin, Alexander 34.10
Atkinson, Donald 10.15
Aubertine, Horace 24.06
Auerswald, Mary 2.08
Auton, Sylvia 4.17
Ayabe, Harold I. 3.07
Ayers, Jerry B. 14.11
Ayers, Mary N. 14.11
Ayrer, James E. 19.21

Babad, Elisha Y. 20.12
Bail, Frederick T. 6.06
Bailey, Bruce E. 14.14
Bailey, J. P. Jr. 26.18
Bailey, Stephen K. 17.15
Baird, Hugh 8.01
Baird, Leonard L. 4.17
Baker, Eva L. 8.20, 17.22, 26.11, 26.22, 35.18
Baker, Georgia P. 19.18
Baker, James 20.14
Baker, Phoebe K. 20.24
Ball, Samuel 28.13
Ballesteros, David 15.01
Baltes, Paul B. 14.13
Banathy, Bela H. 26.22, 32.05
Banks, Henry 3.12
Banks, Ronald E. 8.12
Barbaresi, Patricia N. 28.17
Barber, Larry 14.01, 19.18
Barbera, Linda 26.17
Barcikowski, Robert S. 10.16, 19.23, 20.13, 25.17
Barclay, Lisa K. 19.25
Barden, Barbara 34.14
Bargar, Robert 8.22
Barger, Corinne 10.06
Barnabei, Fred 2.08
Barnes, Barry P. 19.07
Barnett, Don 2.03
Barnhill, Bruce M. 36.15
Baron, Bruce 35.16
Bart, William M. 14.13
Barton, Grant 26.13
Bartos, Robert 25.07
Bashaw, W. L. 27.18
Bashook, Philip G. 17.11
Bateman, Richard A. 6.05
Bauman, Dan 27.01
Bausell, R. Barker 10.06, 15.19
Bavery, James 15.07
Bayless, David L. 4.20, 26.18
Beard, Jacob G. 3.11
Beardslee, Ed 27.05
Beattie, Clive C. 27.06
Beattie, Ian D. 26.09
Beattie, Richard 25.08
Beauchamp, George A. 27.06
Beck, Isabel 36.08
Becker, Howard 34.08
Beeler, Kent D. 13.04
Beers, Joan S. 24.03
Beggs, Donald 19.20, 26.17
Beilby, Albert 24.02
Beilin, Lois A. 3.04, 4.08
Bendel, Jon S. 34.20
Benjamin, Richard C. 8.12
Bennett, David A. 19.10
Bennett, Roger V. 25.07, 33.03
Bentzen, Mary M. 27.07
Bercovici, Antonia 6.08
Bereiter, Carl 33.04
Berenson, Dave 6.01
Berger, Robert J. 15.05
Bergsten, Jane W. 17.11, 19.23
Berliner, David C. 3.12, 27.20, 32.10, 36.13
Bernhard, Keith 24.02
Bernstein, Irene H. 15.28
Berry, Richard 10.10
Bertram, Charles L. 15.06
Besag, Frank P. 28.07
Besel, Ronald 3.11
Bessemer, David W. 15.25
Best, Bill 35.11
Bianchini, John C. 17.01, 27.12
Bicknell, Jack 19.22
Biddle, Susan S. 13.15
Biddle, W. Barry 13.15
Bidwell, Charles E. 28.07
Bilby, Robert W. 36.18
Billington, Marjorie J. 6.07
Bingman, William 25.07
Bippus, Stanley L. 3.10
Birch, Daniel R. 26.04
Birch, Edward 29.13
Bishop, James M. 27.07
Bishop, Lloyd K. 20.10
Biskin, Donald S. 13.19
Black, Harvey B. 4.01, 13.09, 26.10
Blair, Ralph 13.06
Blindert, H. Dieter 35.22
Blitz, Allan N. 28.05
Block, James H. 26.21, 27.04
Block, Karen 36.08
Blommers, Paul J. 17.07
Blood, Ronald E. 13.10
Bloom, Benjamin S. 26.21, 27.04
Bloomfield, Byron C. 13.07
Blount, H. Parker 37.09
Blumberg, Arthur 2.02, 26.14
Blumenfeld, Warren 13.06
Board, Cynthia 26.16
Boardman, Gerald 28.16
Bock, R. Darrell 20.11
Boeck, Marjorie A. 35.18
Boger, Robert P. 8.13, 34.18, 35.09
Bollenbacker, Joan 28.06
Boone, Sherle 36.17
Bonney, Lewis A. 8.17, 25.16
Borg, Walter R. 32.10
Borgerding, Judy C. 14.14
Borich, Gary D. 4.19, 29.12
Borland, Candace 35.17
Bormuth, John R. 17.02
Boruch, Robert 28.13
Bosco, James J. 29.13
Boulette, Teresa R. 10.15
Boutwell, Clinton E. 20.14
Boutwell, Richard C. 6.06, 13.09, 19.19, 20.14, 37.05
Bowen, Mack L. 19.24
Bowles, B. Dean 20.02, 27.15
Bowles, Stephen 10.15
Bown, Oliver H. 8.12
Bozarth, Jerry 20.01
Bracht, Glenn H. 20.12, 22.01
Brading, Paul L. 36.15
Bradley, Robert H. 29.22
Brain, George B. 37.08
Bramble, William J. 26.07
Branca, Nicholas A. 33.05
Brandenburg, Dale C. 10.16, 26.14, 36.20
Brandes, Barbara J. 19.18
Brauer, Marilyn 28.01
Brennan, Robert L. 10.01
Brenzel, Barbara 9.01
Bright, George W. 33.05
Bright, Louis 8.02
Brittain, Clay V. 10.01
Bronfenbrenner, Urie 24.01
Brooks, Glenwood C. Jr. 25.09
Bromley, Ann 12.02
Brophy, Jere 8.13, 15.19, 28.12
Broudy, Harry S. 36.01
Brown, Bobby R. 10.07, 15.17, 28.05, 29.06
Brown, Daniel J. 27.17
Brown, Edward K. 6.10, 14.14
Brown, Eric 6.19
Brown, Frank 17.04
Brown, Jeannette A. 15.03, 19.25, 36.10
Brown, Jerry L. 8.16
Brown, Robert D. 6.17
Brown, Roscoe C. Jr. 17.04
Brown, William J. Jr. 4.20
Brubacher, John S. 36.01
Brumbaugh, Robert 37.07
Bruner, Jerome 34.02
Bryan, Miriam M. 4.04, 12.01
Bryan, Tanis 33.13
Bryant, J. Howard 25.04
Bryson, Seymour 15.13
Buchanan, Aaron D. 19.06
Buchanan, Edith B. 17.19
Buckholdt, David R. 3.11, 25.11, 29.15
Buchmiller, Archie A. 13.08
Budding, David W. 2.04
Budoff, Milton 20.12
Bunda, Mary A. 19.23
Burchinal, Lee 19.03
Burns, James M. 34.02
Burry, James L. 8.16
Burstall, Clare 6.09, 26.09
Burton, Nancy W. 19.23
Bush, Robert N. 19.03
Bushell, Don 34.03
Bussis, Anne M. 28.11, 33.10

Butler, Cornelius 35.16
Button, Christine 6.02
Byers, Joe L. 19.21

Cafferata, Dan 6.18
Cahen, Leonard S. 19.23, 25.17, 27.20
Calfee, Robert 6.04
Callahan, Carolyn M. 14.11
Callahan, Daniel M. 15.27
Callahan, John J. 35.08
Cameron, Henry 3.08
Campbell, Donald S. 29.12
Campbell, Paul 4.20
Campbell, Ronald F. 36.05, 37.06
Campbell, Stanley 13.07
Camplese, Donald 26.06
Carbonari, Joseph P. 13.19
Carline, John 25.07
Carlson, Evelyn 15.04
Carlson, James E. 20.13
Carlson, Kenneth 8.12
Carmichael, Benjamin E. 15.06
Carmichael, Dennis L. 27.04
Carpenter, James L. 14.01, 15.02
Carroll, John B. 6.09, 10.10, 26.21
Carry, L. Ray 33.05
Carter, Heather L. 33.05
Cartwright, G. Phillip 28.05
Carver, Donald W. 17.10
Carver, Fred 35.07
Cassidy, Gordon R. 37.07
Caudill, Harry 35.11
Caylor, John S. 20.14
Chambers, David W. 37.02
Chan, Adrian 20.21
Chandler, Theodore A. 3.01
Chansky, Norman 14.04
Chaples, Ernest A. 25.09
Chapman, Robert 34.04
Chapman, S. C. 32.01
Charters, W. W. Jr. 32.02
Chase, Francis S. 15.06
Chaudhari, Ramesh 17.05
Chester, Mark I. 28.12
Chisholm, Margaret 15.01
Christoffle, Pamela 10.10
Chuang, Ying C. 29.21, 35.16
Churchman, David A. 19.12
Ciguere, Connie 15.02
Cistone, Peter 27.17
Clark, Philip M. 20.14
Claudy, John G. 15.11
Cleary, T. Anne 10.17
Clegg, Ambrose A. Jr. 25.18, 26.01, 27.01
Clegg, Blanche 19.19
Clements, Tom 2.09
Clifford, Margaret M. 6.06, 35.21
Cline, Marvin G. 20.11
Cochran, David 33.10
Cody, John J. 15.13
Coffing, David G. 19.21
Coffing, Richard T. 14.13
Cohen, Alan 6.17
Cohen, Sabina R. 14.04
Cohen, Stuart J. 36.20
Cohick, Jane W. 15.05
Coke, Esther U. 6.08, 15.25, 29.22
Colantoni, Claude 3.10
Colbert, Charles 13.07
Cole, Henry P. 19.18, 26.07
Cole, Nancy S. 10.17
Coletta, Anthony J. 17.20
Coleman, James S. 6.09
Collier, Richard R. 29.06
Collins, Elmer 10.10
Colson, John 36.02
Comptois, Joseph 2.04
Comunale, Anthony S. 17.11
Conaway, Larry E. 8.17
Connett, William 28.24
Connelly, F. Michael 17.19, 33.01
Connolly, John J. 2.07
Conway, James 17.08
Conway, Jill 3.02
Cook, Ann 29.01
Cook, Blair 27.05
Cook, David R. 15.08
Cook, Desmond L. 15.06
Cook, Fred S. 34.09
Cook, Harold 3.04, 14.11, 36.20
Cook, Thomas 28.13
Cooke, Gary E. 6.04
Cooke, Robert A. 15.27
Cooley, Willaim 36.08
Cooper, Bruce S. 26.15
Cooper, Ted L. 36.01
Cordis, Leora L. 35.09
Corey, Elaine 19.24
Corlis, Carol A. 33.10
Cormier, William H. 2.08, 3.11, 13.19
Coron, Howard 24.06
Cosca, Cecilia 34.07
Costa, Crist 17.05, 19.10
Costanzo, Matthew 29.25
Cote, Ron 20.20
Coughlan, Robert J. 15.27
Coulson, John M. 6.05
Counelis, James S. 7.01
Cox, David L. 4.08, 15.24
Cox, Delton 33.09
Cox, James 19.12
Cox, William F. Jr. 8.07
Crabtree, Walden B. 4.17
Craig, Robert C. 10.20
Crandall, David P. 8.05, 10.04
Craven, Eugene C. 27.15, 28.18
Crawford, D. H. 17.14
Creech, F. Reid 10.10
Cresswell, Anthony M. 32.04, 37.07
Crites, John 2.06, 20.01
Croft, John 17.08
Cromack, Theodore R. 15.09
Cronin, Thomas 28.23
Crooks, Terence J. 14.09, 28.14
Cross, Lawrence H. 15.24, 20.13
Crothers, Edward J. 37.09
Crouse, James H. 10.07, 36.20
Crouse, James M. 33.08
Culbertson, Jack A. 13.10, 36.05
Cullen, Thomas J. 19.04
Cullinan, Bernice 15.18
Cunningham, Donald J. 36.13
Cunningham, Jo L. 8.13, 35.09
Cunningham, Luvern L. 15.27
Curcio, Ronald P. 29.11
Curry, Lynn 6.04
Cusick, Patricia 36.20
Cusick, Philip A. 25.19, 27.17
Cypress, Beulah K. 27.16
Cyrier, Roseann 14.01

Dagenais, Ferdinand 34.07
Daily, Frances M. 27.09
Dalton, William 34.08
Danish, Steve 20.01
Darlington, Richard B. 10.17
Darr, Alice D. 34.14
Davidson, Robert E. 20.24
Davies, Don 15.04
Davis, Dwight 36.20
Davis, Frederick B. 13.02
Davis, Gary A. 25.02, 26.13, 28.04
Davis, J. Kent 3.01, 6.11, 25.02
Davis, Natalie Z. 3.02
Davis, O. L. Jr. 13.15, 19.15, 25.18, 34.14
Davis, Otto A. 3.10
Davis, Paul R. 28.20
Davis, Richard W. 10.16
Davis, Wayne K. 28.14
Dawis, Rene V. 19.24
Deal, Terry 34.16
Dececco, John P. 35.12
Defferbaugh, Sue A. 35.20
Degraaf, Carl A. 20.12
Diechmann, John 26.09, 32.07
Deineka, Mike 3.06
Delong, Arthur R. 19.22
Dembo, Myron H. 13.19
Denk, Joseph 14.06, 35.24
Dennis, Virginia C. 20.23, 36.10
Dentler, Robert A. 29.21
Denzel, Harry 6.07
Derivera, Margaret 34.03
Derr, C. Brooklyn 37.08
Dershimer, Richard A. 27.03
Desberg, Peter 4.02
De Visser, Louis 10.15
DeVries, David L. 19.19
Devries, Rheta L. 3.04
Diana, A. Louise 26.18
Dienes, Barbara 17.19, 34.19
Dietz, Karen D. 15.11
Dil, Nasim 34.11
Dill, John 4.21, 15.26
Dill, Lenora 36.20
Dillman, Duane H. 14.12, 33.11
Diluzio, Geneva 3.07
Dimas, Chris 19.05
Dinham, Sarah M. 13.13
Dionne, Joseph 19.12
Divesta, Francis J. 27.20
Divine-Hawkins, Patricia 29.12
Dodl, Norman 25.14
Dohner, Charles 19.04
Dolan, Carolyn L. 37.01
Dolinsky, Donna S. 8.01
Dolly, John P. 35.21
Dommermuth, Paul R. 25.09, 27.01
Donaghy, Joseph J. 15.07
Donovan, David L. 17.05
Dornseif, Allan W. 19.21
Dorozenski, William 27.10
Dowaliby, Fred J. 27.20, 36.14
Downing, Jimmy L. 20.09
Doxsey, Jim 28.15
Drescher, Seymour 16.02
Drew, Charles R. 14.12
Drummond, William H. 25.03
Ducanis, Alex J. 35.04
Duchastel, Philippe C. 29.06
Duke, Richard 14.12
Dunay, Lillian R. 15.09
Dunn, Bruce R. 10.07
Dunn, Thomas 8.01, 26.17
Dunn-Rankin, Peter 3.08, 15.25
Dunteman, George H. 4.20
Dupuis, Victor L. 33.08
Durham, Jim 2.07
Durzo, Joseph 24.02
Dusewicz, Russell A. 14.10
Dustin, Richard 13.01
Dyer, Henry S. 10.10
Dyer, James W. 19.19
Dyer, Jean L. 10.20
Dziuban, Charles D. 15.02, 20.11, 28.16, 32.07

Eagle, Norman 6.13
Eash, Maurice 35.02
Eastabrook, Glenn 27.01
Ebel, Robert L. 27.03 28.06, 35.13
Eddy, Elizabeth 24.03
Edelman, Murray S. 26.08
Edgar, Donald E. 36.18
Edgar, Patricia M. 37.04
Edmonston, Leon P. 17.12
Edwards, Audrey T. 14.11
Edwards, Keith J. 6.16, 19.19
Edwards, Thomas M. 14.11
Egbert, Robert 20.26
Egermeier, John C. 34.18
Eggert, Wallace V. 15.09
Ehman, Lee H. 19.15
Ehresman, Norman D. 13.03, 20.09
Eichelberger, Tony 19.20
Eiseman, Jeffrey W. 10.04
Eisner, Elliot 34.02
Elkind, David 15.12
Ellett, Chad D. 35.21
Ellis, Arthur K. 2.03
Elsner, Paul 15.23
Elsom, Billy F. 8.07, 25.08
Elson, Donald E. 20.09
Elstein, Arthur S. 15.16
Elwell, Albert 19.24

Ely, Donald D. 20.14
Ely, Donald P. 8.18, 15.01
Emans, Robert 15.18
Emerton, R. Greg 25.10
Emmer, Edmund T. 29.15
Emory, Ruth 2.09
Emrick, John A. 20.26, 25.14
Engelkes, James R. 6.13, 20.01
Engle, Patricia 34.05
Englehardt, David 4.19
English, Fenwick W. 15.01
Ennis, Robert H. 20.19
Entwisle, Doris R. 24.03
Epps, Edgar C. 4.21, 7.01, 15.26
Erickson, Edsel L. 19.05, 36.18
Erickson, Fredrick D. 37.01
Evans, Francis B. 34.07
Evans, Franklin R. 10.20
Evans, John R 15.08
Evans, John W. 15.28, 20.26, 35.01
Evans, Robert C. Jr. 4.20
Everhart, Robert 32.02
Evertson, Carolyn M. 15.19, 20.24
Ewell, Kathleen S. 14.04

Fakouri, Ebrahim 26.07
Falkson, Joseph 29.10
Falusi, Arnold J. 17.08
Farber, Irvin J. 19.21
Faricy, William H. 28.18
Farine, Avigdor 25.19
Farley, Frank H. 15.20, 17.06, 25.11, 26.23, 27.20, 28.12, 29.12, 36.14
Farrell, Joseph 29.08
Faunce, Richard W. 6.18
Faust, Gerald W. 4.01, 19.19
Featherstone, Joseph 3.03
Feitler, Fred C. 25.16
Feldhusen, John F. 4.14, 15.12 17.10, 25.02, 26.13, 28.04
Feldman, Katherine V. 37.05
Feldman, Robert S. 33.08
Feldman, Sandra 24.06
Felice, Lawrence G. 34.07
Felkin, Deborah 34.17
Fellenz, Peter J. 20.09
Felsen, Martin F. 26.14
Felsenthal, Helen 10.03
Felsenthal, Norman 10.03
Fennema, Elizabeth 19.06
Fenner, Bradford J. 29.11
Fenske, Robert H. 12.02
Ferguson, Jon S. 2.02
Ferguson, Patrick 6.02
Ferrante, Reynolds 2.07
Ferritor, Daniel E. 3.11, 19.21, 25.11
Feshbach, Norma 6.08, 15.25, 35.09
Feshbach, Seymour 6.08, 8.09
Feige-Kollmann, Laila 15.25
Fikes, Brenda 27.08
Fincher, Cameron 4.14
Findley, Warren 4.21, 8.22 15.26, 26.21
Fink, Arlene 8.16
Finkelstein, Leonard B. 35.19
Finley, Carmen J. 26.18
Finn, Chester 28.23
Fisher, C. W. 28.11
Fisher, James E. 17.08
Fisher, Maurice D. 8.07
Fishman, Roger 24.05
Fitzhenry-Coor, Ina 29.15
Flanders Ned A. 3.12, 8.21, 26.01
Flango, Victor F. 37.07
Flaugher, Ronald 4.21, 15.26, 35.05
Fleming, Emmett 10.10
Fleming, James T. 15.18
Fleming, Margaret 20.05
Flemings, Vincent 24.03
Fletcher, Harold J. 8.07
Fletcher, John D. 29.06
Flora, Ben V. 33.05
Fogelmann, Billye 34.07
Follman, John 4.11, 10.20 15.07, 32.07
Forbes, Roy 27.16
Forster, Fred 15.02
Forsyth, Robert A. 10.16, 26.14
Fortune, Jimmie C. 35.18
Foster, Garrett R. 3.11, 8.17
Foster, Stephen F. 17.11
Fox, Dennis 33.09
Fox, Karen F. A. 25.11
Fox, Lynn H. 10.08
Fox, Robert 2.09
Frank, Austin C. 8.15
Franzen, William 25.03
Frase, H. Weldon 19.22
Frase, Lawrence T. 6.07, 10.01, 34.17
Frayer, Dorothy A. 25.01
Frederiksen, Norman 10.20
Freelow, Robert 17.04
Freeman, Howard E. 15.28
French, Joseph L. 10.08
Frey, Peter W. 17.10
Friar, John T. 6.08
Friedman, David 10.16
Friedman, Harvey 29.15
Friedman, Morton P. 4.02
Friedman, Philip 29.15, 36.17
Frisch, Michael 5.01
Frohreich, Lloyd 17.05
Frohring, W. R. 14.13
Fruth, Marvin 25.19
Fujimoto, Takashi 29.11
Fujita, Keiji 29.11
Fullan, Michael 27.01
Fuller, Frances F. 8.21
Fullilove, John 28.23
Funk, Kerri L. 20.23
Furst, Norma F. 6.17

Gaa, John P. 25.01, 26.06. 29.22
Gable, Robert K. 15.03, 17.20, 27.16
Gage, N. L. 10.05, 28.11
Gagné, Ellen D. 13.15
Gagné, Robert 25.02, 28.04, 36.08
Gaines, Edythe 15.01
Gaines, W. George 26.21
Gaite, A. J. H. 29.11
Gall, Meredith D. 25.18, 26.01
Gallop, A. L. 35.08
Games, Paul A. 20.13
Gander, Mary J. 29.11
Garber, Bernard 26.20
Garner, William T. 17.05
Garrard, Judith 20.21
Garrett, Candace S. 17.06, 20.23
Gartano, Carl 4.15
Garvin, Alfred 25.02
Gaul, William 35.01
Gaynor, Alan 32.01
Geisert, Paul G. 4.19
Gentile, J. Ronald 4.08
George, Carolyn S. 6.11
Gephart, William J. 17.02
Gerlach, Vernon S. 37.05
Getzels, Jacob W. 19.03, 36.11
Geyer, John 6.19, 31.01
Ghodooshim, Morad 4.15
Gibb, E. Glenadine 33.05
Gilberts, Robert 36.05
Gilford, Dorothy M. 10.10
Gillin, Carolyn 33.11
Gillis, John 14.08
Gillmore, Gerald M 14.09
Gillooly, William B. 10.09, 29.11
Giralt, Emily 35.17
Girmscheid, David 20.21
Giroux, Roger M. 19.10, 35.07
Girrard, Catherine 26.12
Gittell, Marilyn 29.01
Gittings, Barbara 13.06
Glaser, Ezra 10.10
Glaser, Robert 4.06, 29.06, 34.18
Glasman, Naftaly S. 27.04
Glasnapp, Douglas R. 19.23, 35.17
Glass, Gene V 15.03, 34.03
Glatt, Charels A. 24.05
Glazer, Hilda R. 15.24
Gliessman, David 32.10
Gnagey, William J. 20.21
Goldberg, Milton 19.14
Golden, Gloria 32.10
Goldenberg, Ronald 2.02
Goldin, Gerald A. 19.08
Goldthorpe, Marjorie S. A. 36.19
Goldupp, Ocea 33.10
Golub, Lester S. 35.20
Gooding, C. Thomas 32.07
Goodlad, James 24.01
Goodlad, John I. 27.07, 28.02, 29.03, 36.07
Goodwin, Judy 6.10
Goodwin, William L. 34.03
Gooler, Dennis D. 24.02
Gordon, C. Wayne 2.04
Gordon, Edmund W. 28.06
Gordon, Gene 26.17
Gordon, Ira J. 34.03
Gordon, Jerry J. 4.15
Gorth, William P. 3.09
Goslin, David A. 28.07
Gotts, Ernest 34.11
Gould, Thomas F. 17.13
Goulet, L. R. 14.13
Gow, Doris T. 14.04
Gowie, Cheryl J. 4.07
Gowin, D. Bob 20.19, 26.11
Grady, Michael 13.08
Grainer, Marc 29.10
Grannis, Joseph C. 27.10
Granowsky, Alvin 27.02
Grant, Alfred D. 36.14
Gray, William M. 14.02
Greaney, Betty J. 14.13
Green, Lee 29.10
Green, Paul A. 20.13
Green, Thomas F. 36.04
Greenberg, Barry 12.02
Greenberg, Kenneth 36.20
Greenberg, Sandra 20.23
Greenberg, Selma 28.12
Greenblat, Kathy 14.12
Greene, John F. 17.20
Greene, Maxine 37.08
Greene, Michael B. 27.10
Greenfield, T. Barr 32.06
Gregory, John W. 33.10
Gregory, Peter B. 6.18
Gress, James R. 33.03
Griffin, Gary A. 17.19, 26.05
Griffin, Robert 27.16
Grinder, Robert E. 29.17
Gripp, Tom 15.23
Grobe, Robert P. 13.19
Grobman, Hulda 19.04
Gronlund, Norman E. 25.08
Gropper, George L. 26.11
Grotelueschen, Arden 33.01
Grove, John 32.11
Grubb, Ralph E. 26.10
Guenther, John 19.15
Guion, Robert M. 28.06
Gullickson, Arlen R. 15.07, 29.24
Gunderson, Doris 32.10
Gustafson, Richard A. 6.18, 20.09
Guthrie, John T. 6.08, 10.09
Guttentag, Marcia 20.10, 29.01

Haag, Carl H. 35.05
Haake, Bernard F. 4.12
Haber, Ralph 8.06
Hackney, Harold 2.08
Haddox, Victor G. 3.07
Haenn, Joseph F. 19.21
Hagans, Rex 35.16
Hagerty, Michael P. 25.17
Haggart, Sue A. 17.02, 37.08
Hakstian, A. Ralph 2.05
Hale, G. A. 15.12
Hale, Jim 28.16
Hales, Loyde W. 29.11
Hall, Bruce W. 25.14
Hall, Douglas P. 32.06

Hall, Francine S. 32.06
Hall, Keith A. 36.14
Haller, Emil J. 28.17, 36.10
Halperin, Samuel 28.23, 35.01
Halperin, Silas 27.18
Halpern, Gerald 2.02
Halpin, Mary E. 10.09
Halstead, Jon 17.10
Halstead, Michael N. 25.09
Ham, Thomas H. 37.02
Hamachek, Don E. 15.03
Hambleton, Ronald K. 3.09, 19.21
Hammer, Charles 27.12
Hammond, Pierce A. 3.10
Hampton, John D. 20.14
Hancock, Robert 6.11
Hanes, Michael L. 6.04
Hannapel, Raymond J. 14.10
Hansen, Duncan N. 15.17, 26.09, 28.05, 29.06
Hansen, Mark 13.10
Hansen, Morris 27.12
Hansford, Byron 15.01
Hanson, E. Mark 27.01, 28.18
Hanson, Ralph A. 15.05
Hapkiewicz, Walter G. 19.19, 20.21, 33.08
Hara, Kazuo 29.11
Harckham, Laura 25.08, 36.20
Hareven, Tamara 14.08
Harkness, Suzanne C. 19.25
Harman, Harry H. 2.05, 4.18
Harnishchfeger, Annegret 20.18, 25.10
Harootunian, Berj 10.05, 15.22
Harris, Chester W. 4.18
Harris, Lynn 36.16
Harris, Margaret L. 4.18
Harris, Rue 35.16
Harris, William H. 34.04
Harris, William T. 35.08
Harrow, Thomas L. 32.07
Harste, Jerome C. 8.16
Hartman, Marilyn D. 35.20
Hartnett, Barbara M. 15.09
Harty, Harold 14.10
Harvey, Jasper 34.11
Hatch, Evelyn 4.02
Hathaway, Walter E. 20.11
Hatley, Richard V. 13.10, 35.17
Hauck, William E. 6.06, 13.15, 36.16
Havelock, Ronald 2.09
Hawley, Willis 32. 04
Hayden, Alice H. 34.11
Hayes, Andrew 35.07
Hayman, John L. Jr. 6.17, 15.05
Heath, Robert 26.01
Hecht, Alfred R. 6.14
Hecht, James 19.20
Hecht, Kathryn A. 4.17
Heffernan-Cabrera, Patricia 19.01
Heinrich, Darlene L. 26.09
Helms, Henry A. 4.20
Helms, Samuel T. 6.16
Helsel, Ray 28.16
Henderson, Edmund 27.09
Henderson, Judith 32.10
Hendrickson, Gerry 34.10
Hendrix, Vernon L. 2.07
Hentschke, Guilbert C. 37.08
Hepner, Ethel M. 19.18
Herriott, Robert 15.01, 29.24
Herron, Carol 35.19
Hess, Robert D. 8.07, 24.01
Hess, Robert J. 20.18
Hickrod, Alan G. 17.05
Hicks, Bruce L. 26.10, 29.06
Hidde, Janet 13.15
Higgins, Norman C. 25.11
Hill, Henry W. 36.07
Hill, Richard E. 17.02
Hill, Richard K. Jr. 17.11, 20.09
Hillenmeyer, Gale P. 35.18
Hiller, Jack 6.07, 13.19 26.17, 29.22, 32.07
Hillery, Joe M. 34.14
Hillman, Stephen 10.06
Hills, John R. 26.21
Hills, R. Jean 36.05
Hilton, Thomas L. 10.10
Hines, Brainard W. 15.06, 36.16
Hines, Rebecca 27.08
Hinkley, Edward 26.18
Hirschfeld, Gerhard 28.02
Hiscox, Suzanne B. 35.18
Hislop, Richard W. 10.06
Hittlemen, Daniel R. 27.02
Hochman, Irvin 2.07
Hodges, Richard 15.18
Hoffman, Jack I. 4.14
Hofmann, Richard J. 3.04, 25.17, 27.18
Holden, Marjorie H. 4.08
Holden, William J. 3.04
Holen, Michael C. 28.20
Holland, John L. 6.16
Holloway, William H. 4.15
Holman, Glenn C. Jr. 4.07
Holtz, Ruth R. 20.12
Holz, Alan W. 14.13
Homme, Lloyd 8.02
Honig, Alice S. 3.10
Hood, Joyce E. 6.11
Hood, Paul 8.05
Hoover, Hiram D. 17.11
Hopkins, Charles R. 13.16, 28.01
Hopkins, John E. 13.09
Hopkins, Kenneth D. 15.07, 20.12
Horlick, Allan S. 7.02
Horowitz, Helen 7.02
Hosford, Ray E. 10.15
House, Ernest R. 14.14
Houston, Robert 8.01, 24.06
Houston, Susan 9.01
Houtz, John C. 26.13
Howe, Harold II 6.09
Howell, John F. 20.13
Howey, Kenneth 8.01, 15.01
Hoy, Wayne K. 20.20
Hubert, Lawrence J. 15.07
Huberty, Carl J. 17.07
Huff, Stuart 12.02
Huffman, Harry 13.16, 32.09
Hughes, Helen E. 33.13
Hull, Ronald E. 15.10, 27.01
Hullinger, Ronald L. 37.02
Hummel, Thomas J. 14.03
Humphrey, Arthur Jr. 29.21
Humphreys, Lloyd G. 10.17
Hunkins, Francis P. 2.03, 25.18, 33.03
Hunt, David E. 27.20
Hunt, Dennis 3.08, 20.12
Hunt, Kellogg W. 27.02
Hunt, Maure Jr. 33.10
Hunter, Beverly C. 14.06, 35.24
Hunter, Madeleine 6.12
Hunter, Michael G. 8.18
Hurley, Rod 13.04
Hurst, Julie 28.18
Husen, Torsten 6.09
Hutchins, Robert C. 26.20
Hutson, Barbara A. 4.07, 6.11
Hyman, Ronald T. 27.06

Iannaccone, Laurence F. 13.10, 15.28, 32.06, 37.08
Iannone, Ronald V. 25.07, 35.11
Ianni, Francis A. J. 34.08, 37.08
Ibsen, Charles 36.02
Idstein, Peter 36.20
Ignatovich, Frederick R. 19.10
Impara, James 27.12
Ingersoll, Gary M. 27.20, 34.17, 36.16
Ingle, Robert B. 13.13
Innes, Thomas C. 3.11
Isherwood, Geoffrey B. 20.20
Ison, Roger E. 4.17

Jackson, Gregg B. 34.07, 36.09
Jackson, Stephan L. 19.18
Jacob, Saied H. 15.15
Jacobs, James 3.11
Jacobs, John F. 20.12
Jacobson, Eric 35.24
Jacobson, Milton D. 3.07, 4.17 8.07, 35.08
Jacobson, Robert 24.02
Jaeger, Richard M. 3.09, 19.23, 27.12
James, Thomas G. 10.07
Jamison, Dean T. 29.06
Janzen, Henry L. 6.06
Jaski, Ernest B. 8.11
Jenkins, Joseph R. 15.19
Jennings, Bettye L. 27.10
Jennings, Luther 13.19
Jensen, Kenneth 34.05
Jenson, George 36.02
Jerman, Max E. 19.06, 27.05
Jester, Robert E. 26.09, 29.11
Jeter, Jan T. 13.15, 19.15
Jewell, Robert 25.10
Johnson, Donald M. 25.02, 28.04
Johnson, Emma C. 36.07
Johnson, Gary P. 29.25
Johnson, Henry C. 29.25, 35.21
Johnson, Joseph C. II 10.06
Johnson, Karl 32.11
Johnson, Rita B 37.02
Johnson, Ronald E. 37.09
Johnson, Thomas J. 20.18, 34.03
Johnson-Hernandez, Patricia 37.02
Jones, J. Charles 4.07, 36.16
Jones, Irwin 33.09
Jones, John 32.02
Jones, Leon 17.12
Jongeward, Ray 29.10
Jordan, Thomas E. 35.09
Joyce, Bruce R. 10.05, 26.05
Judd, Wilson A. 25.20, 29.06
Jung, Charles C. 2.09, 10.04
Jung, Chic 29.10
Junker, Linda K. 14.02

Kaestle, Carl 5.01
Kagan, Norman I. 8.21
Kaiser, Henry F. 2.05
Kalisch, Stanley J. 28.05, 37.05
Kalin, Maurice 26.06, 27.10
Kammann, Richard 15.25
Kane, Robert B. 10.03, 14.13
Kapes, Jerome T. 13.03
Kaplan, Robert 6.07
Karlson, Alfred L. 33.01
Karman, Felice J. 8.15
Katz, Lilian G. 33.10, 35.21
Katz, Michael B. 9.01
Katz, Paula L. 26.10
Katz, Phyllis A. 19.05
Katzenmeyer, Conrad G. 3.07
Kaufman, Martin 28.13
Kay, Patricia M. 4.03
Kean, John M. 14.10
Kean, Michael H. 24.05
Keating, Daniel P. 10.08
Kee, Daniel W. 20.24
Keele, Reba L. 6.08
Keely, Charles B. 25.10
Keely, Diane L. 25.10
Keepes, Bruce D. 34.05
Keesling, James Ward 17.12 26.14
Keeton, Anne 25.17, 36.16
Keilman, Peggy 35.12
Keilty, Joseph 17.20
Keislar, Evan R. 8.20
Keiter, M. Roberta 8.17
Keller, Don F. 36.13
Kelley, H. Paul 35.05
Kelly, Edward F. 27.06
Kendall, Janet R. 6.11
Kennedy, John J 27.16
Kennell, John H. 36.15
Kenoyer, Charles E. 15.06, 36.16
Kersh, Mildred 19.04
Kerst, Stephen 20.24
Keselman, Harvey J. 17.07
Kett, Joseph 14.08
Kidder, Steven J. 15.08, 19.19

Kifer, Edward W. 28.12
Kiley, Lawrence A. 28.17
Kilpatrick, Jeremy 20.08, 27.05
Kimball, Solan P. 34.07
Kimbrough, Ralph 29.25
Kimmel, Ellen B. 32.07
King, F. J. 25.17
King, Nathaniel 26.20
Kipilka, Marcella L. 33.11
Kirby, Edward A. 26.17
Kirk, Barbara A. 8.15
Kirst, Michael W. 15.04, 28.23, 35.15
Kise, Joan D. 34.14
Kissler, Gerald R. 10.07
Kite, Alan B. 28.08
Kitsuse, John 33.13
Klare, George R. 10.01
Klausmeier, Herbert J. 4.12, 25.01, 37.05
Kleg, Milton 6.02
Klein, M. Frances 27.06, 28.02, 36.07
Klein, Stephen P. 8.16, 17.11, 19.12
Klein, Susan S. 15.01, 34.10
Kleinke, David J. 10.16, 17.07
Klentschy, Michael P. 36.16
Kline, Charles E. 28.20
Klit, John A. 4.19, 8.18
Klohr, Paul R. 19.27
Knapp, Thomas 10.16
Kneedler, Peter 36.14
Kniefel, David R. 15.05
Kniefel, Tanya M. 4.19
Knight, William C. 17.06
Knipe, Walt 14.02
Knolle, Lawrence M. 4.09
Knopp, Russell P. 15.01
Knowles, Ruby T. 8.07
Koenigsknecht, Roy A. 36.17
Koep, Robert G. 26.09
Koether, Mary E. 29.22
Koff, Robert H. 35.17
Kohl, John 28.20
Kohl, John W. 6.05
Kohler, P. Terence 17.20
Kolakowski, Donald 14.13
Koler, Paul 8.06
Kolm, Richard 7.01
Koop, Richard 10.20
Kopan, Andrew T. 7.01
Koran, Mary L. 27.20, 37.02
Kosecoff, Jacqueline B. 2.04, 19.12
Kotch, Robert A. 10.01
Kourilsky, Marilyn 2.04
Krahmer, Edward F. 14.02
Krathwohl, David 8.22
Kratochvil, Daniel 6.01
Krause, Merton 33.13
Kraushaar, Otto F. 26.15
Krenkel, Noele 6.18
Kress, Gerard C. 36.15, 37.02
Kribs, Harold Dewey 15.17, 25.04
Kroeger, Fred 12.02
Kroll, Arthur M. 10.10
Kromhout, Ora M. 28.05
Krumboltz, John D. 13.01
Krus, David J. 25.09
Krus, Patricia H. 25.14
Kryspin, William J. 4.14
Kulhavy, Raymond W. 19.19, 36.13
Kulm, Gerald 19.24
Kunetka, Jim W. 17.12
Kunkel, John R. 20.18
Kunkel, Richard C. 3.10
Kunkel, Richard S. 37.04
Kuttler, William 32.05
Kuznik, Anthony 2.07
Kysilka, Marcella 35.02

Labelle, Thomas 29.08
Labouvie, Gisela V. 14.13
Labrecque, Richard T. 26.07
Lacefield, Warren 19.18
Lafleur, N. Kenneth 13.01, 19.25
Lahnston, Anton T. 2.03, 33.07
Lake, Dale G. 2.09, 15.27
Lally, J. Ronald 3.10
Lamb, Pose 10.03
Landry, Richard G. 15.03
Langenbach, Michael 19.09
Langer, Philip 36.07
Larimore, David L. 26.07
Larkin, Ralph W. 2.02, 29.21, 36.10
Lasmanis, Juris C. 19.10
Lawson, Andrew 28.08
Lawton, Stephen B. 29.23
Lazerson, Marvin 5.01
Leary, Paul 8.05
Le Baron, Walt 27.17
Leean, Connie 24.02
Leestma, Robert 34.02
Legum, Stanley 19.09
Leichter, Hope J. 34.08
Leinhardt, Gaea 3.10, 26.08
Leinhardt, Samuel 3.10
Leithwood, Kenneth A. 35.02
Lennon, Roger T. 4.21, 15.26
Lesgold, Alan M. 36.08
Leslie, Judith W. 19.05
Leslie, Larry L. 19.05, 29.22
Lessing, Elise E. 26.17
Letchworth, George 19.09
Levien, Roger 14.06, 35.24
Levin, Henry M. 27.04
Levin, Joel R. 20.24, 28.26, 29.12, 36.13
Levine, Donald M. 34.08, 37.08
Lewandowski, Anne 10.06
Lewis, Barbara 26.13
Lewis, Ernest 19.20, 26.09
Liberty, Paul G. Jr. 3.10, 15.11, 17.10, 35.17
Licata, William 19.01
Lichtenberg, James W. 14.03
Lichtenwalner, Joanne 8.13
Lieberman, Ann 10.04, 27.07
Liebert, Roland J. 27.01
Light, Leah 4.02
Likens, Al 28.01
Likert, Rensis 15.27
Lindsay, James 4.19
Link, A. D. 28.20
Linn, Robert L. 10.17
Lippitt, Ronald 2.09
Lipson, Joseph I. 34.16
Littlejohn, Mary 3.01
Livingston, Samuel A. 33.11
Lloyd, Kenneth E. 10.07
Loadman, William E. 10.16, 32.07
Loeding, David 36.13
Logan, Fay W. 27.10
London, Stephen D. 36.19
Long, Barbara H. 27.09
Lonsdale, Richard 32.01
Loret, Peter 27.12
Loring, William 13.07
Lorton, Larry L. 28.01
Loue, William E. III 14.04
Low, D. Stewart 4.01
Lucas, Jana M. 10.09
Lucas, Marilyn S. 10.09
Luehrmann, Arthur 14.06, 35.24
Luger, George F. 19.08
Luker, William A. 13.03
Lundgren, Ulf 27.09
Lundsteen, Sara W. 15.18
Lushene, Robert E. 26.17
Luskin, Bernard 15.23
Lusted, Lee 15.16
Lusterman, Don-David 34.06
Lutz, Frank W. 24.05, 26.20, 29.25, 34.04, 35.07
Luyben, Paul D. 28.05
Lynch, Michael L. 17.10
Lynch, Patrick D. 13.10
Lynch, William W. 10.06
Lyons, J. Daniel 25.04
Lytle, James H. 24.05

Maas, John 25.19
Maccia, Elizabeth S. 8.04, 20.19, 34.10, 37.03
Maccia, George S. 20.19
MacDonald, James B. 26.05
MacDonald, Randolph R. 36.16
MacDougall, Mary A. 15.03, 19.25, 36.10
Macginitie, Walter H. 4.08
Mack, Herbert 29.01
Mackenzie, Richard S. 37.02
Macready, George 26.16
MacWorth, Norman 8.06
Madaus, George F. 3.08, 28.06
Madden, Christine 35.09
Madden, Edward 35.09
Madson, Marilyn 3.12
Maguire, Louis 35.16
Mahan, James M. 14.10, 25.10, 32.07
Main, Dana 33.11
Mallinger, Barry L. 27.16
Malone, Lana C. 15.11
Malone, Wayne 10.20
Mandeville, Garrett K. 26.16
Manker, Charles C. Jr. 36.04
Mann, Dale 32.04
Mann, Lester 15.24, 20.13
Mann, Philip 19.14
Mannebach, Alfred J. 20.09, 32.05
Marantz, Steven M. 36.14
Marasciulo, Leonard A. 15.07, 28.22
Marco, Gary L. 15.05
Marcotte, Donald R. 29.22
Marcus, Alfred C. 26.14
Markell, Richard A. 8.09
Marsh, George D. 4.02
Marshall, Jon C. 15.09
Martin, Bernard 32.04
Martin, Clessen J. 8.09
Martin, Don Thomas 7.01
Martin, Gerald R. 4.19
Martin, J. Larry 4.08
Martnett, Barbara M. 20.11
Martorella, Peter H. 2.03, 6.02
Martuza, Victor R. 33.08
Masia, B. B. 14.01
Masla, John A. 19.01
Massanari, Karl 24.06
Mathews, Walter M. 13.06
Mathewson, Grover C. 35.20
Mathis, B. Claude 8.18, 17.10
Mattleman, Marciene S. 6.17
Maurey, James E. 26.11
Mawardi, Betty H. 37.02
Maxwell, Jim 19.24
Mayo, Samuel 13.13
Mazzoni, Tim 37.06
McAdoo, Harriette 13.17
McAvoy, Rogers 26.06, 27.10
McCallon, Earl 19.18
McCampbell, James 36.11
McCann, Richard A. 8.20, 26.22
McCann, Walter, 32.04
McCarthy, Robert 35.08
McClure, Robert M. 17.19
McConkie, George W. 6.07, 8.09, 37.09
McCook, William 27.16
McCune, Shirley 34.10
McDaniel, Ernest 15.12, 17.10
McDaniels, Garry 19.14
McDonald, Frederick J. 8.21, 10.06, 24.06, 35.18
McDonald, Roderick P. 2.05
McElhinney, James H. 3.10, 37.04
McGary, Carol 15.04
McGivney, Joseph 37.06
McGowan, John R. 20.13
McGuiness, Thomas P. 34.05
McGuire, Christine 15.16
McIsaac, Donald N. Jr. 19.10, 27.15
McKay, Bruce 34.20
McKeachie, Wilbert J. 14.09
McKenna, Frank 29.25
McKenzie, Gary R. 26.04
McKinney, Floyd L. 20.09
McKinney, W. Lynn 17.19
McLaughlin, Gerald W. 28.18

McLaughlin, John P. 10.07
McLean, Leslie D. 25.17, 36.16
McLeod, Douglas B. 3.14
McNally, Lawrence E. 26.06
McNamara, Thomas 15.02
McNamera, James 32.01
McNeil, Keith 28.24
McPartland, James M. 6.16
McRae, Douglas J. 25.14
McSweeney, MaryEllen 15.07, 29.22
Means, Gladys H. 8.07, 25.08
Means, Robert S. 8.07, 25.08
Means, Virginia M. 13.15
Medford, Robert 37.07
Medley, Donald M. 25.03, 26.08, 28.13
Meers, Dale 24.01
Meese, M. Kathryn 8.03
Mehrens, William A. 28.06
Meinke, Dean L. 6.11
Meissner, Judith A. 36.17
Meixel, Carol A. 36.10
Meller, David V. 29.06
Melvin, Leland D. 14.10
Mennerick, Lewis 37.04
Mercer, Jane 4.21, 15.26
Meredith, Gerald M. 3.07
Merlos, Ramon 34.07
Merrifield, Phillip 4.21, 15.26, 25.02, 28.04
Merrill, M. David 4.01, 13.09, 19.19, 34.17
Merrill, Paul F. 15.17, 28.05, 37.05
Merriman, Howard 6.17
Merritt, Daniel L. 2.02
Merwin, Jack C. 22.01
Merwin, William C. 19.15
Meyer, Donald L. 27.13
Mikaelian, Sam 25.14
Miles, Matthew B. 10.04, 15.27, 27.01
Miller, Donald M. 20.18
Miller, Douglas R. 29.11
Miller, Jack W. 27.06
Miller, Lamar P. 4.21, 15.26
Miller, Michael H. 24.03
Millman, Jason 17.22, 34.09
Milner, Stuart D. 19.06
Milstein, Mike 37.06
Minar, David W. 25.10, 35.15
Mirman, Sanford 27.05
Miskel, Cecil G. 2.02, 13.10, 35.17, 37.07
Mitchell, Steven R. 27.15
Mitzel, Harold E. 14.06, 15.18, 35.24
Mizelle, Richard M. 35.20
Modiano, Nancy 36.18
Moe, Ed 29.10
Moeller, Gerald 15.02
Montare, Albert 36.17
Montgomery, Mary E. 3.14
Moody, Lamar 14.10
Moody, William B. 10.06
Moon, Charles E. 36.15, 37.02
Moon, Edward L. 28.20
Moore, Carol A. 29.15
Moore, Dan 24.01
Moore, J. William 13.15
Moore, John N. 15.09
Moore, Michael 34.16
Moore, Parker A. 28.17
Morey, Roy 28.23
Morgan, Anthony W. 28.18
Morgan, Donald 6.14, 13.04
Morgan, James D. 8.17
Morgart, Robert 7.01
Morine, Greta 3.12, 10.05
Morine, Harold 27.08
Morris, Jon R. 20.07
Morrison, Betty 34.14
Morrison, James L. 2.07
Morrow, Richard 15.10
Mosberg, Ludwig 4.02
Mosby, Doris P. 28.06
Moser, James M. 3.14
Mosher, Edith K. 28.23
Mouw, John 19.20
Moy, James 25.19
Moy, Mabel L. 10.16
Moyer, Sara C. 4.07
Mulgrave, Norman 35.04
Mullennex, John 25.07
Mulvaney, Mary E. 29.12
Murai, Harold 4.07
Murphy, Dennis T. 28.12
Murphy, Patricia D. 13.03
Murray, C. Kenneth 25.07, 35.11
Murray, Frank B. 3.04
Musella, Donald F. 28.11, 36.19
Musser, Gary L. 33.05
Myers, Edwin C. 19.21

Nacke, Phil L. 8.09, 29.12
Nafziger, Dean H. 6.16
Nahemow, Iris S. 35.19
Nalin, Paul 10.06, 35.18
Nattress, Leroy W. Jr. 4.14
Nee, John G. 6.14, 12.02
Nelson, Barbara A. 6.11
Nelson, Gordon J. 17.06
Nelson, Richard 15.10
Neuhauser, Charlotte L. 34.09
Newell, John M. 33.08
Newell, L. Jackson 36.05
Newman, Isadore 4.17
Newman, Murray A. 14.14, 17.12
Nicely, Robert F. Jr. 4.09
Nichols, Irene 8.15
Nickens, John 6.14
Nicol, Elizabeth A. 26.14
Niedermeyer, Fred C. 15.02
Nighswander, James 19.20
Nightingale, Harvey 29.23
Nimnicht, Glendon 19.07, 36.18
Nisselson, Harold 10.10
Nissenbaum, Stephen 14.07
Noah, Harold J. 6.09
Nordt, Martha 27.10
Norris, Robert 33.09
Novotney, Jerrold M. 28.02
Null, Eldon J. 20.20, 28.20
Nunnery, Michael 25.16
Nye, Sherilyn L. 2.08

O'Connor, Edward F. 17.11
O'Connor, Patricia 28.14
O'Neal, Robert 32.05
O'Neil, Harold F. Jr. 25.20, 26.17, 27.20
O'Reilly, Robert P. 3.09
O'Shea, David 29.08
Ober, Richard L. 25.03, 28.26
Oberlander, Mark I. 8.08, 26.17
Offenberg, Robert 6.10
Ojemann, Ralph H. 6.01
Okey, James R. 8.16
Oliver, Donald 34.02
Oliver, J. D. 20.09
Olsen, Henry D. 26.04
Olson, Arthur H. 28.16
Olson, Arthur R. 13.08
Omark, Donald 26.08
Oosterhof, Albert C. 27.16
Opacinch, Cheryl A. 12.02, 27.01
Orlosky, Donald 25.03
Ornstein, Allen C. 25.12
Osborne, Alan R. 33.10
Osborne, John W. 10.07
Osburn, Curtis R. 2.02
Osipow, Samuel 2.06
Owada, Yasuyuki 29.11
Owen, Steven V. 14.11, 25.08, 27.16
Owens, Douglas T. 4.08
Owens, Robert G. 20.10
Owens, Thomas R. 10.16, 36.14
Ozenne, Dan G. 17.12

Packard, John S. 32.02
Packer, Janette L. 37.02
Page, Gordon 15.16
Page, William 15.18
Pagni, David 25.16
Palmer, R. R. 16.01
Palmo, Artis J. 27.08
Paltridge, James G. 28.18
Palumbo, Dennis J. 20.10
Pankratz, Robert 19.01
Pantalion, Charles A. Jr. 8.09
Papageorgiou, Mary P. 27.08
Pardew, E. Michelle 15.03
Parish, Charles 4.17
Park, Young 15.23
Parker, Clyde 14.03
Parker, Franklin 35.11
Parker, Reese 14.14
Parks, David J. 36.02
Parsley, James F. 26.04
Parsons, Jane S. 3.08
Pascal, Charles E. 8.08, 26.09, 28.14
Pate, Robert H. 6.16
Patterson, Oliver 27.02
Patton, Marcus S. 35.17
Payne, Joseph N. 17.14
Peak, Wayne 32.11
Peck, Lucy 28.12
Peck, Robert F. 13.15, 15.19
Pellegrin, Roland J. 15.10, 32.02
Pelitz, Fillmore 27.02
Penfield, Douglas A. 19.05
Peper, John B. 2.04, 19.14, 27.12
Pepitone, Emmy A. 36.10
Perry, Roger H. 2.02
Perry, Sherry A. B. 20.24
Persell, Caroline 34.18
Peters, Sean C. 8.09
Petersen, Anne C. 20.11
Peterson, James M. 25.11
Peterson, John C. 6.11
Peterson, Marla P. 6.18
Peterson, Robert M. 32.05, 35.16
Petrie, Thomas 15.10, 27.01
Pettibone, Timothy J. 13.19, 20.20
Pezdek, Kathy 34.17
Pfaff, Carol W. 24.03
Pfeiffer, Isobel L. 34.14, 35.04
Phillips, James A. Jr. 27.09
Phillips, Mark 13.19
Phillips, Milton 3.07
Picard, Stewart 27.11
Pilo, Marvin R. 25.10
Pinar, William F. 35.04
Pincus, John 29.08
Pino, Rene 2.09
Pinsky, Paul D. 3.09
Pirkle, John K. 32.07
Plake, Barbara 17.11
Plant, Mark 33.11
Ploss, Elaine A. 10.06
Plotkin, Lawrence 4.21, 15.26
Plourde, Paula E. 6.17
Poggio, John P. 19.23, 20.21
Pohlmann, John T. 26.17
Ponder, Gerald 6.02
Popham, W. James 2.04, 10.05, 17.22
Popkewitz, Thomas S. 28.08
Popp, Helen M. 10.03, 15.25
Popp, Jerome A. 36.04
Porter, Andrew C. 17.12
Porter, David 26.15
Porter, Douglas 15.25, 27.10
Porter, Teddie W. 26.15
Poster, John B. 26.04
Postlethwaite, T. Neville 6.09
Potter, David A. 10.06, 24.06
Potts, Marian 6.04
Powell, Evan R. 20.23
Powers, James E. 4.07
Poynor, Lee 29.06
Prawat, Richard S. 20.24
Price, Gary E. 2.06, 15.11
Price, Jay R. 33.08
Proger, Barton B. 15.24, 20.13
Provus, Malcolm 20.05
Pruzek, Robert M. 2.05
Ptaschnik, Jeffrey I. 37.04
Puffer, Winthrop 27.11, 36.09
Purl, Mabel C. 34.05
Pyecha, John N. 4.20

Quellmalz, Edys 19.09
Quigley, Patrick A. 33.08
Quilling, Mary R. 4.18, 25.01
Quinn, Harry P. 3.10
Quirk, Thomas J. 8.01, 14.04, 26.14

Rabinowitz, Richard 7.02
Rafky, David M. 25.09
Rogosta, Marjorie 2.02
Ragsdale, Ronald G. 20.15
Rahmlow, Harold F. 19.07
Ramirez, A. R. 3.10
Ramsey, Margaret 24.05, 26.20, 29.25, 34.04
Rand, David C. 3.04, 26.04
Randhawa, Bikkar S. 3.08, 20.12
Raths, James 35.03
Ratusnik, David L. 36.17
Ravitch, Michael M. 36.13
Rayder, Nicholas F. 19.07, 36.18
Rayner, Keith 8.09
Reardon, Francis J. 8.08, 10.20
Reed, Cheryl 17.18
Reed, Rodney 17.04
Regan, Ellen 35.03
Rehberg, Richard A. 37.04
Reid, J. Christopher 4.14
Reilly, Richard R. 27.16
Reinhard, Diane L. 14.14
Reinsman, Sorel 20.15
Render, Gary F. 36.15, 37.02
Rentfrow, Robert K. 33.10
Rentel, Victor M. 27.16
Renzulli, Joseph S. 14.11, 25.02
Resnick, Lauren B. 36.08
Reynolds, Horace N. 14.05, 15.24
Reys, Robert E. 19.17, 20.08
Rhett, Haskell 10.10
Rhodes, C. I. 15.11
Rhodes, Dent M. 35.21
Rice, Marion 26.05
Richards, Arlene 35.12
Richards, Katherine R. 35.17
Richardson, Eugene J. Jr. 34.04
Richardson, Penny 24.02
Richey, Rita C. 34.09
Richter, Ingo 35.15
Rickards, John P. 10.07, 36.13
Ricks, James M. 28.06
Riegel, R. Hunt 35.22
Ringenbach, Susan E. 26.13
Ringer, Fritz 16.01
Ringler, Leonore 8.12
Ripple, Richard E. 3.01, 15.12
Roaden, Arliss 8.22, 13.09, 29.24
Roberts, Arthur D. 15.03
Roberts, Joseph B. 27.10
Roberts, Julian 20.10
Robertson, Douglas J. 36.16
Robin, Stanley S. 29.13
Robinson, Eileen C. 10.09
Robinson, H. Alan 15.18, 27.02
Robinson, James 33.01
Robinson, Ronald 32.06
Robison, Helen 15.09
Roebuck, Flora N. 6.01
Roelfs, Pamella J. 6.13
Roettger, Doris D. 6.11
Rogers, Donalld D. 17.02
Rogers, Virginia 25.18, 33.11
Rohwer, William D. Jr. 20.24, 24.01
Roid, G. H. 14.09, 28.14
Romberg, Thomas A. 3.14, 4.18, 19.23
Ronchi, Donald M. 8.21
Rookey, Thomas J. 8.08, 10.20
Root, Darrell K. 8.22, 26.22
Rose, Clare 26.14
Rose, Suzanne 19.24
Rosen, Richard F. 15.24
Rosen, Susan 8.09
Rosenberg, Mae E. 24.01
Rosenfield, Albby G. 19.24
Rosenoff, Wayne 8.05, 26.11
Rosenshine, Barak 6.17, 13.15 14.09, 15.01, 17.22, 26.01, 27.08, 28.26, 35.03
Rosenthal, Daniel J. A. 29.06
Rosner, Benjamin 4.03
Rosner, Jerome 27.10
Ross, Robert 6.04
Ross, Sylvia 26.08
Rossmiller, Richard 37.07
Rothberg, Robert A. 32.07
Rothkopf, Ernst Z. 6.07, 26.10 37.09
Rothman, Sherran 17.20
Roudabush, Glenn E. 14.02
Rouse, Donalld E. 34.04
Rovinelli, Richard 3.09
Rowe, G. Dwight 8.18
Rowe, Wayne 15.03
Roweton, William E. 35.12
Rowlyk, Shirley 20.12
Royer, James M. 34.17
Rubin, Louis J. 6.05, 19.03
Rubin, Rosalyn A. 25.14
Rude, Stanley H. 28.26, 37.05
Ruder, Kenneth F. 4.07
Rumery, Robert E. 15.09, 20.11, 35.21
Rundle, Sarah A. 4.02
Runkel, Philip J. 10.04
Russell, Howard H. 35.02
Russo, Lillian N. 27.09
Ryan, Frank L. 2.03
Ryan, T. Antoinette 32.05
Ryder, Martin 26.20

Saario, Terry 32.04
Sabatino, David A. 15.24, 35.22
Sabers, Darrell L. 26.16
Sachdeva, Darshan 17.07
Sadker, David G. 34.20
Sadker, Myra J. 17.06
Sagan, Edgar L. 26.07
Salomon, Gavvriel 36.14
Samuels, S. Jay 3.01, 6.04, 6.19, 35.22
Sanchez, Pauline 33.09
Sanders, Jack 8.22
Sanders, James R. 17.10
Sanders, John 2.02
Sanders, Nicholas 36.10
Santoro, David A. 4.15
Sattler, Howard E. 29.15, 36.14
Sawyer, John 36.11
Saxe, Richard W. 20.20
Scali, Henry A. 37.02
Scandura, Joseph 28.04
Scanlon, Robert G. 4.12, 35.19
Schaeffer, Earl S. 24.01
Schafer, Walter E. 37.04
Schalock, H. Del 14.02
Scheifley, Verda 8.13
Scheinfeld, Daniel 33.13
Schevill, Helen Shaner 28.26
Schluck, Gerald J. 20.13, 25.17, 28.24
Schmalgemeier, William L. 28.14
Schmidt, J. W. 32.01
Schmidt, William H. 8.13, 15.07, 29.22, 33.08
Schmuck, Richard A. 2.09, 10.04, 15.27, 29.10
Schooley, Daniel E. 8.18
Schrader, Robert 10.10
Schrank, Robert 29.01
Schriber, Peter E. 3.09
Schuck, Robert F. 36.15
Schumacher, Janet 36.20
Schwab, Lynne S. 2.03
Schwartz, Henrietta S. 36.11, 37.04
Schwartz, Larry 25.14
Scott, Craig S. 6.14, 12.02
Scott, Marvin B. 33.07
Scribner, Jay 32.04
Sealey, Ronald 17.08
Sedlacek, William 25.09
Sefein, Naim 4.15
Segala, Angelo 27.05
Sehulster, Jerome R. 10.07
Seibert, Warren F. 20.24
Seidel, Robert J. 14.06, 35.24
Selden, Ramsay W. 4.17, 35.08
Semmel, Dorothy 20.23
Semmel, Melvyn I. 20.23, 28.13
Sepe, Thomas D. 2.07
Seraydarian, Louisa 35.09
Severson, Roger A. 28.26
Sewall, Michael 28.26
Sewell, Alan F. 19.21
Sgro, J. A. 32.01
Shack, David M. 25.08
Shaffer, Warren E. 14.03
Shamo, G. Wayne 10.03
Shanahan, Judith K. 33.07
Shapiro, Bernard J. 6.04
Shapiro, Leo J. 35.17
Shapiro, Phyllis P. 6.04
Sharpes, Donald K. 15.04
Shavelson, Richard J. 27.20, 36.13
Shaw, R. Bruce 26.11
Sheehan, T. Joseph 36.15
Sheldon, Stephen M. 36.18
Shepard, Loretta A. 15.03
Sherif, Carolyn 26.20
Sherman, Thomas M. 13.19
Sherrill, James M. 33.05
Shiman, David 27.07
Shimron, Joseph 26.08
Shinn, Glen C. 20.09
Shirkey, Edwin 20.11
Shoemaker, David M. 10.16
Shooter, M. 17.07
Short, Edmund C. 19.27
Shuell, Thomas J. 26.23
Shulman, Lee S. 15.16
Shultz, Jeffrey 37.01
Shumway, Richard J. 19.06
Sie, Maureen 17.05
Sieber, Sam D. 6.05, 8.05, 29.24
Siegel, Martin A. 28.26
Siegelman, Marvin 19.05
Siepert, Albert F. 15.27
Silber, Kenneth 35.24
Silberman, Harry F. 26.22
Silberman, Melvin L. 3.01
Silverman, Stuart H. 32.07
Simpson, Elizabeth Leonie 34.02
Sinclair, Robert L. 13.19, 19.02, 33.06, 34.20
Singer, Harry 10.09
Skager, Rodney W. 14.14
Sklar, Bernard 28.07
Slaichert, William M. 13.13
Smart, Kim L. 10.01
Smith, Albert B. 12.02
Smith, Cecelia M. 19.04
Smith, Douglas R. 15.08
Smith, Gerald 33.05
Smith, Gloria 15.13
Smith, I. Leon 20.23, 35.22
Smith, Jay 10.11
Smith, Louis M. 28.21, 37.04
Smith, Martin E. 26.10
Smith, Michael D. 4.07
Smith, Richard 13.04
Smith, Robert M. 20.23
Smith, Timothy 28.05
Smock, H. Richard 14.09, 28.14
Snelbecker, Glenn E. 35.09
Snyder, C. Harrison 29.13
Snyder, Fred A. 14.10
Soar, Robert S. 2.02, 15.19, 25.03
Soares, Anthony T. 14.01, 32.07
Soares, Louise M. 14.01, 32.07
Soars, Ruth M. 2.02
Sockloff, Alan L. 4.14
Soles, Stanley 4.12
Solomon, Daniel 8.08
Solomon, Warren H. 19.21
Somers, Gerald G. 13.03
Sorensen, Phillip H. 20.26, 34.03
Sousa, George N. 35.17
Sowder, Larry K. 33.05
Spady, William G. 27.04
Sparberg, Nancy Z. 25.14
Sparfka, Sarah A. 15.16

Spaulding, Robert L. 27.08, 34.03
Speedie, Stuart M. 26.13
Spence, Betty A. 28.20
Spivack, George 19.14
Sprinthall, Norman 13.01
Spuck, Dennis 32.01
Staaf, Robert 36.02
Stake, Robert E. 2.04, 6.10
Stallings, William M. 28.12
Stampen, Jacob 27.15, 37.06
Stanley, Julian C. 10.08
Stanwyck, Douglas J. 8.11
Stark, Joan S. 10.08
Starks, David D. 28.14
Start, Ann 34.20
Stasz, Cathleen M. 10.06
Stauffer, John 13.13
Stearns, Marian S. 20.26
Steele, Sara M. 28.16
Stein, Mitch 6.07
Steinberg, Lois S. 20.07
Steinhoff, Carl R. 20.10
Stempen, Jacob O. 27.15, 37.06
Stent, Madelon D. 17.04
Stepp, Ermel 15.06
Stern, George G. 3.07, 20.10
Steve, Michael H. 37.05
Stevens, James 25.17
Stewart, Deborah M. 14.02
Stewart, Norman 2.08
Sticht, Thomas G. 20.14
Stiggins, Richard J. 19.21
Stilwell, William E. 32.05
Stimson, James 4.03
Stitt, Jacquelin A. 10.09
Stodolsky, Susan S. 33.01
Stohrer, Kathleen R. 20.14
Stolte, Joanne B. 14.04
Stolurow, Lawrence M. 10.01, 15.17
Stout, Robert 17.08
Strand, John 29.21
Stratton, R. Paul 6.07
Straumanis, Eric R. 35.02
Stufflebeam, Daniel L. 26.22
Sturge, Harry H. 20.07
Sturges, Persis T. 6.07
Styskal, Richard A. 20.10
Subkoviak, Michael J. 20.11
Sullins, Walter 35.03
Sullivan, Timothy J. 28.16
Sulzen, Robert H. 19.07
Summerfield, Harry 37.06
Summers, Jerry 19.09
Super, Donald 2.06
Suppes, Patrick 27.03
Suydam, Marilyn N. 17.14, 19.06
Swaminathan, H. 2.05
Swan, William W. 3.08, 26.16
Swenson, Ingrid 36.13
Swift, Marshall S. 19.14
Swinford, Frances 26.16
Swoope, Karen F. 29.15
Szabo, Michael 29.15

Talbott, John E. 16.02
Tam, Peter T. K. 25.17
Tarr, Elvira 4.03
Taylor, Arthur M. 35.22
Taylor, Raymond G. Jr. 20.13
Taylor, Robert 32.01
Raylor, Susan S. 15.17, 29.06, 35.08
Teichman, Judy 29.23
Temkin, Sanford 19.10
Temp, George 4.21, 15.26
Tempio, Caroline R. 36.15
Tenenberg, Mort 3.12
Tennyson, Robert D. 13.09, 15.17, 27.20
Terranova, Carmelo 20.12, 26.16
Tesconi, Charles Jr. 37.01
Thomas, Adele 4.03
Thomas, Charles L. 4.14, 10.17
Thomas, David B. 25.04
Thomas, Hollie B. 27.18
Thomas, John W. 25.02
Thomas, Norman C. 28.23
Thompson, Bruce 10.10
Thompson, Donald L. 17.20
Thompson, Glen R. 25.14
Thompson, Jay C. 37.04
Thomson, Jack E. 26.14
Thoresen, Carl E. 13.01, 29.03
Thornton, Billy 35.17
Thrash, Susan K. 20.21
Thurlow, Martha L. 35.22
Thursby, Marilyn 27.08
Thurston, John 4.14
Tiedeman, David V. 2.06
Tikunoff, William J. 19.01
Timm, Neil H. 20.13
Timpane, Michael 35.01
Tinto, Vincent 25.09
Tippeconic, John 33.09
Tittle, Carol K. 2.02, 4.03
Tobias, Sigmund 19.07, 27.20, 28.05, 29.06
Tocco, T. S. 25.14
Todd, Vivian E. 2.09
Toothaker, Larry E. 17.07
Togersen, P. E. 32.01
Torney, Judith V. 6.09
Torrance, E. Paul 25.02, 26.13, 28.04, 35.12
Torshen, Kay P. 36.19
Tostberg, Robert E. 36.01
Touq, Dean S. 17.10
Towle, Nelson J. 28.05, 37.05
Towler, John O. 3.04, 26.04
Townsend, Richard G. 27.17
Toy, James 13.06
Traub, Ross E. 3.09, 28.11
Travers, Eugene 33.10
Travers, Robert M. W. 10.02
Treffinger, Donald J. 3.01, 25.02
Trent, James W. 26.14
Trepanier, Mary 3.04
Troug, Anthony L. 29.12
Troutman, Benjamin Jr. 6.02
Troyer, Maurice E. 29.11
Trueblood, Cecil R. 10.06
Tseng, M. S. 15.11, 20.23
Tucker, Jan L. 19.15
Tuckman, Bruce W. 26.06, 33.10
Tuinman, J. Japp 10.09, 29.12
Turner, Richard L. 4.03, 17.23, 19.01, 28.13
Turnure, James E. 6.04, 35.22
Tuta, Kathleen 19.18
Tway, Eileen 15.18
Tyack, David 34.18
Tye, Kenneth A. 26.11, 28.02
Tyler, Louise 27.06
Tyler, Ralph W. 4.18, 19.03, 34.02

Ubben, Gerald 20.07
Ulman, Jerome 13.19
Underwood, Benton J. 4.18
Uprichard, A. Edward 6.02, 10.20
Urofsky, Anita 33.11
Uselmann, Michael S. 6.06

Van Gigch, John P. 17.02
Van Meter, Ed 20.20
Van Mondfrans, Adrain P. 8.02, 13.09, 35.18, 37.05
Varenne, Herve 34.08
Varley, William H. 28.26
Veldman, Donald J. 13.19, 15.19
Veysey, Laurence 16.01
Villano, Maurice W. 26.17
Villanueva, Ma Lourdes S. 3.08
Viskin, Donald 36.02
Vitullo-Martin, Julia 26.15
Vitullo-Martin, Thomas 26.15
Vivekanathan, P. S. 20.09, 33.11
Voelkner, Alvin R. 17.05
Von Harrison, Grant 3.11
Vonk, John A. 36.18
Voss, James F. 34.17

Wacaster, C. Thompson 32.02
Wagner, Andrew R. 8.18
Wagner, Byron M. 37.05
Wahlstrom, Merlin 33.01
Wakefield, Howard E. 13.07
Walden, John 20.07
Walker, Juliet 36.11
Walker, William J. 3.07
Waller, Michael 36.11
Walls, Richard T. 28.26, 36.17, 37.05
Waltzer, Kenneth 5.01
Wanat, Stanley 6.19, 20.13
Wang, Margaret C. 19.24, 26.08
Ward, Beatrice A. 19.01
Ward, Donald 2.08
Ward, Joseph S. 26.11
Ward, William 2.09
Ward, William C. 10.20
Warner, Donald D. 26.20
Warriner, Charles 25.09
Warrior, Della 28.08
Warren, Donald 28.08
Warren, Jonathan R. 20.21
Warren, Richard L. 28.08
Wasik, John L. 15.07, 27.18
Watts, Graeme 28.12
Wax, Murray 28.08
Weaver, J. Fred 17.14, 19.06
Webb, Leland F. 33.05
Webb, Sam C. 4.14
Weber, R. G. 20.21
Weber, Wilfrod A. 19.01
Webster, Murray 24.03
Weidman, John C. 25.09
Weil, Marsha 10.05, 26.05
Weiler, Hans 35.15, 36.19
Weinberg, Carl 26.05
Weinberg, Susan 10.06, 35.18
Weinberger, Jill S. 29.15
Weingarten, Kenneth 8.02
Weinstein, Philip 19.04
Weisman, Russell 37.02
Weiss, Joel 8.08, 16.01, 28.11, 33.10
Weiss, Keith 13.04
Welch, Wayne W. 29.24
Wellens, Barrie 8.12
Wentling, Tim L. 4.19, 8.18
Wermers, Don J. 13.04
West, Charles K. 28.12
Westbury, Ian 17.19, 33.01
Wharton, Keith 14.09
Wharton, William L. 2.07
Wheatley, Grayson H. 4.17, 15.12
Wheeler, Ronald 2.03
White, Bayla F. 15.28
White, Dorothy I. 25.08
Whitely, Susan E. 19.24
Whitney, Douglas R. 26.16
Wholey, Joseph S. 15.28
Wick, John W. 8.18
Wickens, David L. 34.03
Wicker, Frank W. 20.24
Widick, Carole C. 14.03
Widlak, Frederic W. 17.10
Wiegand, Virginia K. 24.01
Wiener, William K. 20.07
Wight, Albert 8.11
Wightman, Lawrence 17.07
Wilbur, Paul H. 32.07
Wilcove, Gail 20.23
Wile, Marcia Z. 36.15
Wiles, David K. 25.16, 29.23
Wiles, Clyde A. 3.14
Wiley, David E. 20.18
Wiley, Dean 37.07
Wiley, James A. 20.18
Wilken, William 35.08
Wilkerson, Doxey 15.01
Wilkerson, William 13.07
Wilkinson, John C. 3.11
Wilkinson, Judith M. 6.11
Willerman, Marvin 32.01
Williams, Barbara 33.07
Williams, Cynthia L. 10.20
Williams, Donald T. 36.01
Williams, E. Belvin 4.21, 15.26
Williams, Reed G. 20.19
Williams, Robert 4.21, 15.26
Williams, T. R. 29.23
Williams, Trevor H. 36.18
Willis, George H. 35.02

Willis, Harriet D. 3.11
Willis, Sherry L. 13.15
Willower, Donald J. 28.16, 32.06, 36.05
Willson, Victor L. 17.07
Wilson, Alfred P. 28.20
Wilson, Edward 25.07
Wilson, James W. 19.08
Wilson, Logan 36.05
Wingard, Joseph A. 19.12
Winne, Philip H. 6.06
Winstead, Richard 6.18
Wirt, Frederick M. 28.23
Wise, Arthur 32.04
Wisehart, Susan 10.06
Wittrock, Merlin C. 8.20, 19.17, 26.22
Wohlferd, Gerald 19.22
Wolf, Vivian C. 19.04
Wolf, W. C. Jr. 8.05, 17.10
Wolfe, Mary L. 33.08
Wolfe, Richard G. 20.18
Wolfe, Robert 8.22
Wolff, Peter 28.26, 29.12
Wolinsky, Gloria F. 34.11
Wood, Samuel 25.03
Woodington, Donald 13.08
Woodley, Katheryn K. 36.20
Woods, Elinor M. 3.08
Woodson, M. I. Charles E. 14.02
Woog, Pierre 19.02, 36.09
Worthen, Blaine R. 13.09, 29.24
Wortsman, Arlene 29.23
Wozny, Cecilia D. 4.08
Wright, William J. 20.18
Wynne, Edward 14.01, 34.16
Yabroff, Bernard 35.16
Yamamoto, Kaoru 35.21
Yarger, Sam J. 8.01
Yasgur, Bruce J. 24.03
Yasutake, Joseph Y. 15.17
Ycas, Martynas 8.08
Yeager, John L. 8.16
Yens, David P. 25.11
Ylvisaker, Paul 34.18
Yoshimitsu, Takei 29.25
Young, Jon I. 13.09, 19.19
Ysseldyke, James E. 15.24
Zalk, Sue Rosenberg 19.05
Zaret, Esther 33.03
Zegler, Robert 25.07
Zeigler, Harmon 32.11
Zimiles, Herbert 26.08, 35.09
Zimmer, Barbara 32.01
Zimmer, Jules 10.15
Zimmerman, Barry J. 8.08
Zollo, Felix 35.08
Zubulake, George R. 8.12
Zullo, Thomas G. 36.15
Zussman, David R. 26.09
Zutell, Jerome B. Jr. 4.17